IDG

Getting pay-back from offshoot [IT] projects

Q: In a recession, who's safe? A: the 'rock-solid' back-end

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SCANDAL TO PUSH SYSTEMS REDESIGN

Energy firms face need to revamp IT capabilities to monitor online trading

BY MICHAEL MEEHAN

As federal investigators dig deeper into a scandal involving shady online energy trading, it looks as if IT departments will be required to redesign the e-commerce systems that once stood out as the pride of the energy industry.

Among the recent findings of the Federal Energy Regulatory Commission: Enron Corp. used its trading systems to boost profits during California's 2000-01 energy crisis, and Enron and other companies in the industry conducted wash trades, in which they would buy electricity at a certain price and immediately resell it at the same price in order to inflate revenue numbers.

Now, it's widely expected that the IT departments of energy trading companies will have to build enough transparency into their trading systems to let regulators "identify which and whether misrepresentation and manipulation is occurring," as FERC Chairman Pat Wood called for during Senate testimony last month.

Industry executives are still waiting for the FERC to weigh in with specific system overhaul requirements, which are expected sometime this summer. But according to analysts, the revamps could cost the industry tens if not hundreds of millions of dollars over the next few years.

Bob Menella, a trading operations vice president at Con Edison Energy Inc., said the White Plains, N.Y.-based company will probably hold off on any future IT projects until the FERC issues its findings and requirements.

"We're at the point now where we're trying to figure out what the ground rules are going to be," Menella said.

Online Trading, page 65

SECURITY UNDER THE GUN

HERE'S A MYTH BUSTER: IT security professionals were expected to be in hot demand following the Sept. 11 attacks, but it hasn't happened. Flat budgets and personnel cuts are forcing many IT security pros to take on more work, while hiring remains soft. Find out what steps security experts like Cardinal Health's John Hartmann (left) and Ed Daniels (right) are taking to sharpen their skills and protect their organizations.

STORY BEGINS ON PAGE 36.

NETS EXPOSED BY 'ROGUE' THREATS

Wireless access points can be Achilles' heel

BY BOB BREWIN

Unauthorized wireless LAN access points that are being surreptitiously installed on corporate networks pose a dangerous and little understood security threat to companies, users and analysts warned last week.

Called "rogue APs," these access points are usually installed without the knowledge of the IT department by employees or branch office and plant managers who want the mobile convenience provided by 802.11b, or Wi-Fi, wireless LANs. But even technology vendors agreed that when this happens, easily exploitable holes are opened in wired networks.

Delphi Corp. is one user that takes the threat seriously. According to Chuck Maiorana, Delphi's director of communications engineering, the Troy, Mich.-based manufacturer of automotive electronic components

Rogue Threats, page 65

WORKERS BLAST ITAA STUDY CLAIMS

IT employees dispute report of skills shortage

BY MELISSA SOLOMON

With 35 years of IT experience and expertise in C++, Java and other technical skills in high demand, Warren MacQueen thinks he should have no problem landing a job.

But the Kansas City-area IT veteran said that after falling victim to mass layoffs at Sprint Corp. in November, he sent out 100 résumés and heard back from only a handful of companies. "I don't think that my skill set is inadequate," he said.

MacQueen is one of scores of IT workers who were angered by last month's Information Technology Association of America report, which claimed there's a shortage of U.S. workers with the right IT skills [QuickLink 29607].

The study projected that despite a 5% dip in the IT job market last year, upward of 1.1 million jobs will be created this year. However, it continued, less than half of those will be filled because workers don't have the right skills. Critics claim that there aren't any jobs in sight and that the supposed

Skills Shortage, page 16

"Are you ready for this one? The CEO just asked for _____ _____."

THE POWER OF IT

The 2002 Computerworld Honors awards showcase the people and companies leading the IT revolution. PAGE 26

SETTING THE RIGHT PRICE

Revenue optimization technology helps firms set prices for maximum profitability, but training and good historical transaction data are necessary to deliver results. PAGE 48

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6 Informix database customers say they're happy about IBM's upgrade promises, but they'd like to see better marketing and support.

7 Four Linux vendors are developing a unified version of the operating system, but market leader Red Hat isn't involved.

8 The safe harbor agreement that indemnifies U.S. companies from European data privacy laws still isn't attracting many takers.

8 After a weak first quarter and recent management changes, SAP will try to regain momentum with users at its Sapphire conference.

9 Some high-profile retailers aren't fully securing wireless LANs in their stores, but they say that no sensitive data is being exposed.

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52 Emerging Technologies: New disk-based backup systems are promising to provide faster restoration at prices that are competitive with tape.

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24 Pimm Fox says business intelligence software is proliferating because IT is lowering the cost and driving the trend of delivering more reports to more people.

25 Thornton May notes it's the quality of the boss — not the money — that causes IT professionals to hunt for new jobs.

66 Frank Hayes says California state officials are sure to undergo a nasty grilling after a hacker compromised a state payroll data file. He offers answers to the questions they'll likely face.

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Informix Users: IBM Mostly Making the Right Moves

Commitment to databases lauded, but marketing, support raise some concerns

BY MARC L. SONGINI

NEARLY A YEAR after it bought Informix Corp.'s database operations, IBM continues to make moves that are keeping members of the installed base it inherited happy — though not without some concerns about issues such as marketing and technical support.

While some Informix customers initially feared that IBM was just trying to find a new market for its own DB2 databases, a half-dozen users said during the past few weeks that IBM has convinced them that it's committed to maintaining the Informix product portfolio.

IBM has delivered 20 Informix upgrades since buying the technology for $1 billion last July, most notably Version 9.3 of the flagship Informix Dynamic Server (IDS) software (see story below). And in April, the company put the Informix products under the same software licensing struc-

Market Matters

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IBM's approach has left Informix customers largely complaint-free thus far, according to James Governor, an analyst at Nashua, N.H.-based consulting firm Illuminata Inc. "IBM has done sickeningly well," Governor said with irony.

IBM has shown a surprising level of openness with its new users, said Fred Hubbard, president of the International Informix Users Group (IIUG) in Menlo Park, Calif. In addition, the upgrades released by IBM have been sturdier and less buggy than Informix was able to deliver, Hubbard said. IBM has even outlined development plans two to three releases in advance, something Informix never did, he added.

However, Hubbard and several Informix users cited some issues. For example, the Informix software continued to lose market share last year, and some users said IBM isn't marketing the databases effectively enough to keep customers from

bolting to products from Microsoft Corp. and Oracle Corp.

"IBM is a silent company in many ways," Hubbard said. "I wish it was not as low-key and demure from a marketing perspective. They're not telling their story as loudly as I believe they should."

An IBM spokeswoman said that the company has sponsored newsletters and user focus groups for Informix customers and that executives have been visiting users. "Our No. 1 objective is to show these customers we are committed to them," she said.

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Looking to demonstrate its commitment to the Informix user base, IBM has made a series of enhancements to the product line that it acquired 11 months ago and said it has more upgrades on the way.

The biggest step taken by IBM thus far has been the release of Version 9.3 of IDS last fall, with new features such as a bundled set of database administration tools. At the same time, it announced a tool that lets IDS 9.3 share data with IBM's own DB2 database. That was followed in November by the release of a so-called grid toolkit that includes both DB2 and IDS.

Without disclosing details, IBM said that it plans to release later this year enhanced versions of Informix's Red Brick data warehouse software and XPS parallel database.

But Colleen Graham, an analyst at Gartner Inc. in Stamford, Conn., said IBM views IBM's current approach as a short-term strategy. "While IBM claims they will continue to support customers on the Informix products, they have also made it clear that DB2 is their flagship product, and they want customers to migrate to DB2," she said.

An IBM spokeswoman acknowledged that the company "is leading with DB2." But, she said, it plans to enhance individual Informix prod-

ucts every 18 months to meet the needs of users who don't want to switch databases. "Customers are not going to be forced to migrate to DB2," she said.

The message that Informix database development will continue for the foreseeable future was also indorsed by Tom Roncarelli, CIO at Blanchard & Loeb Professional Services Inc., which develops credit union software. "We're reassured by IBM's statements," he said.

— Marc L. Songini

NEWS

Vendors Team Up to Merge Linux Releases

But absence of Red Hat leaves questions

BY TODD R. WEISS

A standardized enterprise-only version of Linux is being built by four vendors that are aiming to improve the open-source operating system's appeal to businesses. But Red Hat Inc., the top Linux vendor in the U.S., isn't involved.

Caldera International Inc., SuSE Linux AG, Conectiva SA and Turbolinux Inc. joined last week with more than a dozen hardware and software vendors, including IBM, Hewlett-Packard Co., Advanced Micro Devices Inc. and Intel Corp., to announce that they plan to offer a uniform Linux distribution by the end of the year.

Caldera, SuSE, Turbolinux and Conectiva said they hope to streamline application development by software vendors. By standardizing, they said, vendors will have to certi-

UnitedLinux

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The unified system, called UnitedLinux, will be sold and supported by each of the four vendors. Raleigh, N.C.-based Red Hat wasn't initially invited to join the project, but the participants said it's now open to all Linux vendors.

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Analysts said the striking absence of Red Hat makes the success of the effort uncertain.

George Weiss, an analyst at Gartner Inc. in Stamford, Conn., said it could mean that two separate standardization movements will take hold. Red Hat already has alliances of its own with 80 business partners as part of its corporate adoption strategy, making it less likely that it will join this effort in the future, he said.

"I personally think it would be a comedown for Red Hat, because then they become just another member," Weiss said. "I'm not sure that they're going to come easily to this party."

Bill Claybrook, an analyst at Aberdeen Group Inc. in Boston, said he has reservations about how the initiative can in-

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Mark deVisser, Red Hat's vice president of marketing, said UnitedLinux appears to be aimed at gaining support from application software vendors, which he claimed hasn't been a problem for his company. "They don't solve a problem that we have," deVisser said.◆

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Recent Breaches Raise Specter of Liability Risks

Security incidents could spur suits, analysts caution

BY JAIKUMAR VIJAYAN

Organizations that fail to shore due diligence when it comes to protecting their data assets face a very real risk of legal problems in the not-too-distant future, analysts said.

The renewed caution comes in the wake of last week's news that hackers broke into a California state personnel database and gained access to financial and other confidential personal information on all 265,000 state government employees, including Gov. Gray Davis.

Incidents like this and the recent theft of more than 13,000 confidential records from Costa Mesa, Calif.-based Experian, a major credit re-

LINK LIABILITIES
Companies need to monitor their own security setups and those of business partners. **see page 10.**

porting agency, are shining the spotlight more brightly than ever on liability issues for companies doing business over the Internet, warned Michael Rasmussen, an analyst at Giga Information Group Inc. in Cambridge, Mass.

"The whole issue has gotten to a scale where companies face a real risk of legal liability," Rasmussen said. "There are going to be landmark cases where people are going to be suing other people. That is what is finally going to get the attention of companies."

In the California incident, a hacker broke into a database housed at the state's Stephen P. Teale Data Center in Rancho Cordova and accessed names, Social Security numbers and payroll information for everyone from office workers to judges.

The break-in occurred April 5 and was discovered by the state controller's office May 7,

but it wasn't disclosed to the public or the state employees until May 24.

The handling of the incident has provoked criticism from the California Union of Safety Employees (CAUSE), which slammed state controller Kathleen Connell for the delay in informing victims that their personal information had been compromised.

"It is an outrage that the controller herself has been negligent in recognizing the peril

posed by this high-tech invasion of privacy," CAUSE President Alan Barcelona said in a statement.

Connell's office refuted the criticism and said it had acted swiftly in asking the Sacramento Valley Hi-Tech Crime Task Force to conduct a criminal investigation of the incident.

"It is the Teale Data Center and not the state controller's office that is solely responsible for the security breach, and that agency has accepted full

responsibility," Connell's office claimed in a statement.

Incidents such as these show why companies need to ensure that they are following best practices around information security, said Rick Fleming, a vice president at Digital Defense Inc., a San Antonio-based security consultancy.

"It won't take too many more cases of folks enduring identity theft or financial hardship for somebody to start suing," he warned.◆

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Recent Breaches Raise Specter of Liability Risks

Security incidents could spur suits, analysts caution

BY JAIKUMAR VIJAYAN

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U.S. Firms Skipping 'Safe Harbor'

About 200 companies have signed up;
European privacy enforcement lacking

BY PATRICK THIBODEAU

N EXT MONTH marks the two-year anniversary of the landmark U.S. and European "safe harbor" privacy agreement, which was designed to smooth data exchange across the Atlantic. But thus far, the deal has been largely ignored by U.S. companies and unenforced by European data-protection authorities.

Approximately 200 U.S. companies, mainly high-tech vendors, have signed up for safe harbor. Most of the businesses are small or midsize, but there are notable exceptions, including Microsoft Corp., Hewlett-Packard Co., Procter & Gamble

Co., Eastman Kodak Co. and Intel Corp.

European Union officials last week said that they're disappointed that more companies haven't signed up but they're not giving up on the safe-harbor agreement. Neither is the Bush administration, according to officials and experts in Europe and the U.S.

Companies that sign up for safe harbor agree to follow certain data privacy practices, such as getting users' consent to share their data and allowing customers to access their personal information, as well as data use restrictions.

There's no question that Europe's privacy rules are here to stay. But European authorities, with few exceptions, haven't been aggressively enforcing their rules, even against businesses in their own countries.

Privacy observers in Germany and England said data-protection authorities don't have the staff to enforce privacy laws. England is levying small fines against violators,

but German privacy rules are so complex that it's impossible for local companies to fully comply, said Florian Baum, an attorney at Brobeck Hale and Dorr in Munich. "Nobody, really, is very eager to follow those rules," he said.

In the U.S., a company that violates its stated privacy policy is subject to Federal Trade Commission enforcement action. Some experts suggested that U.S. businesses are avoiding safe harbor because they fear that saying they comply with its stringent terms is akin to painting a bull's-eye on their companies and inviting inspection.

Scott Salley, chief privacy executive at McKesson Corp., said that fear is what's holding U.S. companies back. Nonetheless, his San Francisco-based health care products firm has signed up for safe harbor.

Self-Certification Difficult

Companies that adopt safe harbor self-certify that they're in compliance, but that's not necessarily an easy process.

McKesson created a multidepartmental task force to review its data practices, which led to new rules on data access and a procedure for annual auditing. It was an opportunity to centralize corporate privacy practices, said Salley.

There are alternatives to safe harbor. Companies can use individual contracts stipulating privacy protections. But Salley said safe harbor's blanket coverage is more attractive.

"We need something in place," he said. "If people blow off safe harbor, what are you going to do then?"

Despite questions about the future of safe harbor, the Bush administration supports the agreement, which was adopted during the Clinton presidency.

"The safe-harbor program is one of the easiest, most efficient ways for U.S. companies to comply with the European directive on data protection," said Michele O'Neil, deputy assistant secretary for IT at the U.S. Department of Commerce. ♦

EU: U.S. Financial Law Not Enough

WASHINGTON

Efforts by financial services firms to get European authorities to recognize U.S. financial data privacy rules as being on par with Europe's privacy protections have come up short, leaving the firms in limbo on compliance.

Fritz Bollmann, the European Union's internal markets commissioner, was in Washington last week to meet with U.S. officials on data privacy and other issues.

According to Bollmann, the Gramm-Leach-Bliley Act doesn't pass the "adequacy" requirement under Europe's data privacy rules. That means that financial services firms face the prospect of having to comply with Europe's stringent privacy rules, which require customer consent on many transactions. U.S. firms typically restrict an "opt-out" procedure.

David LeRoy, senior counsel at the American Council of Life Insurers in Washington, said the trade group opinions are now privacy requirements. Citing existing U.S. law, LeRoy said the group feels "that we are more than adequately regulated for privacy."

The personal data of European residents can be exported only to countries that offer data privacy protections similar enough to Europe's privacy rules to be deemed adequate.

The U.S. government wants the European Union to recognize the Gramm-Leach-Bliley Act and other financial privacy laws as adequate protections. But Bollmann said at a meeting of the European American Business Council in Washington that he "regrets" that financial services weren't included in the safe-harbor agreement.

Companies that sign up for safe harbor agree to provide European residents with a stringent set of privacy protections, such as seeking their consent before sharing personal information and agreeing to set limits on the use of the data.

Bollmann cited a number of weaknesses in the Gramm-Leach-Bliley Act, among them that it provides customers the default of sharing their data with a company's business affiliates. A U.S. Department of the Treasury official didn't respond to Bollmann's comments but said discussions were continuing.

– Patrick Thibodeau

SAP Looks to Regain User Confidence at Conference

New CRM, supply
chain software due

BY MARC L. SONGINI

SAP AG has no shortage of challenges to contend with as it comes face to face with users of its applications this week.

Following a tough first quarter and the announcement two weeks ago of management changes at its U.S. subsidiary, SAP will try to pick up some momentum with customers at its Sapphire '02 user conference in Orlando. The company said it plans to announce enhancements to some of the key applications in its Web-enabled mySAP.com suite.

The rollouts will include upgrades of SAP's customer relationship management (CRM) and supply chain management software, according to a spokesman at SAP America Inc. in Newtown Square, Pa. The spokesman, who said the company will also announce some new customer contracts at Sapphire, declined to disclose details about the functionality being added to the products.

In addition, he said that new

worldwide sales chief Leo Apotheker is expected to outline his plans and goals for the U.S. market at Sapphire. Apotheker last month was given responsibility for global field operations and named acting head of SAP America. Wolfgang Kemna, who had been CEO of the U.S. unit, was shifted to a new job as executive vice president of global initiatives within SAP.

Those changes followed a year-to-year decline of 28% in software license revenue at

NEWS

Retailers Defend Low-Level Security on Wireless LANs

Companies say they're not concerned because sensitive data remains secure

BY BOB BREWIN

More high-profile retail chains are being fingered by white-hat hackers for not fully securing wireless LANs installed in their stores. But several retailers said they're not exposing any sensitive data, and some security analysts agreed that the risks don't appear to be great.

While retailers have quickly embraced wireless LAN technology to support applications

SAP America during the first quarter. As a whole, SAP reported a 40% drop in net profit for the quarter, to $56.6 million, although total revenue increased by 9% to $1.6 billion.

"It would be great to see some more stability in the management team here in the U.S.," said Dave Best, CIO at Acterna Corp., a Germantown, Md.-based communications test equipment maker. Acterna uses SAP's R/3 enterprise resource planning applications and CRM software.

"I just hope they don't change too much at once," Best added. "They have people who have established strong customer relationships, which need to be preserved."

SAP hasn't measured up to its own expectations in the U.S. market, said David Dobrin, an analyst at Cambridge, Mass.-based consulting firm B2B Analysts. "SAP is facing a number of serious operational issues, not least of which is an inability to meet sales targets in the U.S.," Dobrin said.

On the CRM front, SAP wants to challenge rivals such as San Mateo, Calif.-based market leader Siebel Systems Inc. But SAP still has yet to have much success at selling its CRM software outside the R/3 installed base, said Erin Kinikin, an analyst at Giga Information Group Inc. in Cambridge, Mass. ▸

such as inventory control and pricing management, officials at companies such as CVS Corp. and The Home Depot Inc. last week said the bulletproof security isn't currently seen as a must-have item.

For example, a security consultant last week claimed that Woonsocket, R.I.-based CVS was operating unencrypted LANs in the Raleigh/Durham area in North Carolina.

Alan Clegg, who works at Firehouse Network Consulting in Apex, N.C., said he detected numerous CVS stores that didn't even have basic Wired Equivalent Privacy (WEP) encryption turned on.

But CVS spokesman Todd Andrews said the company doesn't transmit customer data

over wireless devices.

"We use wireless technology strictly for internal item management," Andrews said via e-mail. "If we were to ever move in the direction of transmitting [customer] information via in-store wireless LANs, we would encrypt the data."

Clegg said he also detected an unencrypted wireless LAN at a store owned by Phoenix-based Petsmart Inc.

He noted that it was easy to pinpoint the LANs because their access points broadcast easy-to-decipher Service Set Identifiers: "cvsretail" for CVS and "PETSMART" for the pet supply retailer.

Home Depot in Atlanta and Best Buy Co. in Eden Prairie, Minn., were cited earlier last month by white-hat hackers as users of wireless LANs that could be accessed by network-sniffing tools. Best Buy said it deactivated some wireless

cash registers after the reports surfaced [QuickLink: 29496].

But like CVS, Petsmart and Home Depot said they're not worried about the security levels on their wireless LANs.

Esther Caceres, a spokeswoman at Petsmart, said the company decided two years ago not to install wireless cash registers because of concerns about the security of customer data. The wireless LANs used in Petsmart's 560 stores don't carry customer information and are isolated from back-end systems, she said.

Low-Risk Uses

Home Depot spokesman Don Harrison said the retailer uses wireless LANs to manage inventory and print price tickets. That information "is not proprietary," he noted.

Craig Mathias, an analyst at Farpoint Group in Ashland, Mass., said the approaches used by retailers like CVS make sense for a low-risk barcode-scanning application. "All

the information a hacker is going to get is how many bottles of shampoo that store has in its inventory," Mathias said.

Companies need to weigh the cost of building a truly bulletproof wireless network, said Chris Konap, an analyst at Mera Group Inc. in Stamford, Conn. Konap said such an effort could equal the cost of deploying the LAN hardware — not a sensible proposition for nonsensitive data, he added. ▸

Sun Expands Custom Configuration of Hardware

Broadens program to integrate systems per customer specs

BY JAIKUMAR VIJAYAN

Sun Microsystems Inc. is expanding a program through which companies can order customized hardware configurations from the vendor.

The company last week announced its new Customer Ready Systems (CRS) program, under which Sun will integrate third-party hardware and software products according to customer specifications.

The CRS service ranges from basic factory integration of standard Sun hardware and software suites to custom con-

Customer-Ready

figurations, system design and life cycle management services involving Sun's professional services group and channel partners, said Raj Das, a director at Sun's integrated products group.

Products that Sun will integrate on the factory floor include all Sun software, as well as customer-provided and noncompetitive third-party software.

Other vendors, such as IBM

A Broader Reach

The program formally widens its initiative under which Sun has been delivering custom bundles of hardware and software products for select customers for the past 18 months.

with its Unix and iSeries servers and Dell Computer Corp. with its PCs, offer similar custom configurable systems.

The University of Hawaii in Honolulu took advantage of Sun's program recently when it ordered more than 200 servers for its student information system. The university received four pallets of fully configured rack-mounted systems that were preowned and ready to be powered on, said Michael

Hodges, the school's manager of systems services.

The preintegration eliminated the need to configure each system, install it in racks and test it — a task that would have taken two full-time IT staffers and several part-timers more than two weeks to complete, Hodges said. "With this order, everything landed on a Friday evening, and we were powering them up on Monday morning," he said.

Tony Adams, an analyst at San Jose-based Dataquest Inc., said factory integration and testing reduce many of the common problems and installation errors that can creep in while new systems are being deployed.

"The biggest benefit for users is the simplification of the whole [integration] process," Adams said. "Sun's taking on more of a risk by committing to integrate the software for customers, but they're returning higher value." ▸

NEWS

U.S. Firms Skipping 'Safe Harbor'

About 200 companies have signed up; European privacy enforcement lacking

BY PATRICK THIBODEAU

NEXT MONTH marks the two-year anniversary of the landmark U.S. and European "safe harbor" privacy agreement, which was designed to smooth data exchange across the Atlantic. But thus far, the deal has been largely ignored by U.S. companies and unenforced by European data-protection authorities.

Approximately 200 U.S. companies, mainly high-tech vendors, have signed up for safe harbor. Most of the businesses are small or midsize, but there are notable exceptions, including Microsoft Corp., Hewlett-Packard Co., Procter & Gamble

Co., Eastman Kodak Co. and Intel Corp.

European Union officials last week said that they're disappointed that more companies haven't signed up but they're not giving up on the safe-harbor agreement. Neither is the Bush administration, according to officials and experts in Europe and the U.S.

Companies that sign up for safe harbor agree to follow certain data privacy practices, such as getting users' consent to share their data and allowing customers to access their personal information, as well as data-use restrictions.

There's no question that Europe's privacy rules are here to stay. But European authorities, with few exceptions, haven't been aggressively enforcing their rules, even against businesses in their own countries.

Privacy observers in Germany and England said data-protection authorities don't have the staff to enforce privacy laws. England is keeping small fines against violators,

but German privacy rules are so complex that it's impossible for local companies to fully comply, said Florian Roum, an attorney at Frederick Hale and Dorr in Munich. "Nobody, really, is very eager to follow these rules," he said.

In the U.S., a company that violates its stated privacy policy is subject to Federal Trade Commission enforcement action. Some experts suggested that U.S. businesses are avoiding safe harbor because they fear that saying they comply with its stringent terms is akin to painting a bull's-eye on their companies and inviting inspection.

Scott Salley, chief privacy executive at McKesson Corp., said that fear is what's holding U.S. companies back. Nonetheless, his San Francisco-based health care products firm has signed up for safe harbor.

Self-Certification Difficult

Companies that adopt safe harbor self-certify that they're in compliance, but that's not necessarily an easy process.

McKesson created a multidepartmental task force to review its data practices, which led to new rules on data access and a procedure for annual auditing. It was an opportunity to centralize corporate privacy practices, said Salley.

There are alternatives to safe harbor. Companies can use individual contracts stipulating privacy protections. But Salley said safe harbor's blanket coverage is more attractive.

"We need something in place," he said. "If people blow off safe harbor, what are you going to do then?"

Despite questions about the future of safe harbor, the Bush administration supports the agreement, which was adopted during the Clinton presidency.

"The safe-harbor program is one of the easiest, most efficient ways for U.S. companies to comply with the European directive on data protection," said Michele O'Neill, deputy assistant secretary for IT at the U.S. Department of Commerce. ◗

EU: U.S. Financial Law Not Enough

WASHINGTON

Efforts by financial services firms to get European authorities to recognize U.S. financial data privacy rules as being on par with Europe's privacy protections have come up short, leaving the firms in limbo on compliance.

Frits Bolkestein, the European Union's internal market commissioner, was in Washington last week to meet with U.S. officials on data privacy and other issues.

According to Bolkestein, the Gramm-Leach-Bliley Act doesn't pass the "adequacy" requirement under Europe's data privacy rules. That means that financial services firms face the prospect of having to comply with Europe's stringent privacy rules, which require customer consent on many transactions. U.S. firms typically retain an "opt-out" provision.

David Leiter, senior counsel at the American Council of Life Insurers in Washington, said the trade group opposes any new privacy requirements. Citing existing U.S. law, Leiter said the group feels "that we are more than adequately regulated for privacy."

The personal data of European residents can be exported only to countries that offer data privacy protections similar enough to Europe's privacy rules to be deemed adequate.

The U.S. government wants the European Union to recognize the Gramm-Leach-Bliley Act and other financial privacy laws as adequate protections. But Bolkestein said at a meeting of the European-American Business Council in Washington that the "regrets" that financial services weren't included in the safe harbor agreement.

Companies that sign up for safe harbor agree to provide European residents with a stringent set of privacy protections, such as seeking their consent before sharing personal information and agreeing to set limits on the use of the data.

Bolkestein cited a number of weaknesses in the Gramm-Leach-Bliley Act, among them that it permits customer data to be shared with affiliates. In U.S. Department of the Treasury official didn't respond to Bolkestein's comments but said discussions were continuing.

— Patrick Thibodeau

SAP Looks to Regain User Confidence at Conference

New CRM, supply chain software due

BY MARC L. SONGINI

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BRIEFS

Microsoft Patches Exchange 2000 Hole

Microsoft Corp. released a software patch to plug a "critical" security hole in its Exchange 2000 e-mail server software. The company said attackers could take advantage of the vulnerability to craft messages that would use all of the processing resources on unpatched Exchange servers, effectively shutting them down. Microsoft gave the flaw its highest severity rating.

Macromedia Fixes Flaw in Java Server

San Francisco-based Macromedia Inc. issued a patch for a buffer-overflow vulnerability that could be used to take complete control of systems that run Version 3.1 of its Java-based JRun server software. The hole affects installations that combine JRun 3.1 with Microsoft's Internet Information Services Web server software on Windows NT and Windows 2000 systems.

Orbitz Extends Deal For Airfare Software

Chicago-based online travel site Orbitz LLC agreed to extend to 2007 a technology licensing deal with Cambridge, Mass.-based ITA Software Inc., which develops airfare shopping and pricing software. The two companies said the agreement also lets Orbitz market ITA's software to corporate travel agents and other travel industry businesses.

Short Takes

CISCO SYSTEMS INC. added support for voice and video traffic to its virtual private network (VPN) routers and integrated VPN functionality into its Cisco 2600 devices. . . . HEWLETT-PACKARD CO. expanded its AlphaServer product line by introducing a rack-mounted system and companion supercomputer for use in high-end technical computing applications.

BSA Nails Corporate Software Pirates

Trade group's Web crawler uncovers illegal file sharing among employees

BY PATRICK THIBODEAU

THE BUSINESS Software Alliance (BSA) is using a new tool to track illegally distributed commercial software, and its detective work has in some cases led to big business.

Corporate workers using peer-to-peer file-sharing software to trade copyrighted files are turning up in the BSA's searches. In some instances, the digital detective work has led to the dismissal of those employees. The trade group's discovery of file sharing under the noses of IT managers also illustrates a glaring computer security weaknesses at some firms.

"Any peer-to-peer system that can penetrate a firewall is an open doorway to any system that is connected to a corporate network," said Michel Kabay, a professor of information assurance at Norwich University in Northfield, Vt.

Smart Agents

The BSA last week said it's using a system from New York-based MediaForce Inc. that deploys intelligent agents to crawl, or search, the Internet for illegal distributors. The system displays the software and the distributor's IP address. The BSA looks up the owner of the address in the Whois database of the Chantilly, Va.-based American Registry for Internet Numbers and sends a "takedown notice" informing the owner of the illegal activity.

Many large and midsize corporations own blocks of IP addresses and are contacted by the BSA directly. In other cases, the Internet service provider (ISP) is contacted, which in turn identifies the distributor and terminates the service.

The automated search agent has made a big difference in the BSA's ability to root out software piracy. Last year, the trade group distributed 5,200 notices to ISPs. Within the first three months of using the Web crawler, more than 8,500 notices were sent out.

The BSA released the preliminary results of its efforts last week but was unable to provide a breakdown of how many notices went to corporations compared to universities and other sources of peer-to-peer file swapping, or how many workers were dismissed. However, at least two companies sent letters to the BSA confirming employee terminations.

There are steps IT managers can take to stop employees from such activities. Windows 2000 and Windows NT have controls that allow systems administrators to prevent program installation. With earlier Windows versions, better user policies and training may help, said Diana Neuman, a security expert at En Garde Systems Inc. in Albuquerque, N.M.

Peer-to-peer systems change the way they operate in an effort to fool firewalls, but corporations that have good firewalls and intrusion logs should be able to identify anomalies, said Neuman.

The BSA said business software makers, including alliance members such as Microsoft Corp. and San Jose-based Adobe Systems Inc., are losing $12 billion per year to piracy worldwide. It said most of the piracy isn't due to illegal file sharing over the Internet, but rather businesses that have illegally deployed software in excess of license agreements. ▶

Download Concerns

Licensing Deals Pose Pitfalls

Users: Software firms use tough tactics to make up lost revenue

BY KATHLEEN MELYMUKA
SAN FRANCISCO

Revenue-hungry software vendors are trying to pump up their sales with licensing tactics that could be costly to unwary users, according to an attorney who spoke at a conference here last week and some users who were in attendance.

Attorney Peter Frazza said this is a treacherous time to be signing software contracts, because vendors are looking to make up for weak sales by pushing terms and conditions that are unfavorable to users. These include provisions for frequent and invasive audits and vague performance guarantees, Frazza said at the technology procurement conference sponsored by Winter Park, Fla.-based International Computer Negotiations (ICN).

Frazza, who is a consultant to ICN, said the best way for IT managers to protect their firms is to insist on using their own licensing agreements. But that's not always easy to do. "Vendors are getting more creative and pushier about getting companies to use their paper," Frazza said, referring to the boilerplate licenses they typically use.

Draw up your own agreement and enlist the support of your CEO and legal department early in negotiations to show that you're serious, Frazza advised. He added that almost every major software vendor will negotiate, if pressed.

Frazza said vendors are also trying to increase the number and invasiveness of software audits in hopes of uncovering breaches of contract that will require additional payments by users. A yearly, notarized certification by a CIO of the number of employees using a software product should be sufficient to satisfy a vendor's audit requirements, he said.

Users should never let vendors connect with their systems or allow "friendly audits" that aren't required by a contract, Frazza advised. "That's the most common phrase of 2002, and it makes no sense," he said. "Audits are not friendly. If the contract doesn't give them the right, never let them set foot in your company."

Frazza's message resonated with the audience of IT procurement managers. More than a dozen attendees said they're seeing an increasing number of such vendor gambits this year. But none wanted to be identified.

"I'm seeing it and I'm hearing it from peers," said an IT procurement officer who works at a large insurance company in the Northeast.

"We're doing a lot of those 'no-nos,'" such as allowing vendors access to systems, said an attendee from a Midwest manufacturer. "But it comes down from the CIO, so there's not much we can do about it." ▶

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You know just as good isn't good enough. Today's leading companies have to be greater than the competition by a wide margin. At Sprint, we've got the network, the people and the services that can help you build unequalled and sustainable competitive advantage.

An intelligent network

Advantage one: our network. It was built from the ground up as a unified whole. (No technological patchwork here.) That means we deliver unsurpassed reliability and interoperability, so you can leverage existing investments in systems and applications and migrate to our latest and greatest technology — like 3G mobile solutions for greater productivity — when you're ready. In fact, we're the only provider that owns and operates both its own nationwide wireless and wireline access to your critical data apps.

A network of intelligence

Advantage two: our people and services. We have over 2,200 technical and support professionals, including 1,500 trained engineers. Plus, we're an industry leader in on-staff Cisco Certified Technicians and Certified Security Specialists. So what are all these people doing? Answering your questions. Building your customized applications. And working to help ensure your systems are safe and secure.

Greater competitive advantage — another sign of an intelligent network and the people who make it work (for you!)

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◆ **Sprint.**

HP Retooling Channel Sales/Partner Strategy

Users await news on how HP/Compaq merger will affect products and support

BY JAIKUMAR VIJAYAN

H EWLETT-PACKARD Co. may have been quick out of the gate with details about its postmerger product and services road map, but the firm is still fleshing out details of its channel sales strategy.

The issue is important for users because it affects the way in which HP products will be sold and supported in the future, analysts said.

Companies such as HP, IBM and Sun Microsystems Inc. are all trying to expand their direct sales efforts on the hardware front, said Laurie McCabe, an analyst at Summit Strategies Inc. in Boston.

At the same time, they need to maintain channel relationships at the high end to help deliver complex technologies, she said.

"What vendors such as HP are trying to do is elevate themselves as much as possible into a primary contact position with customers, as opposed to being called into play in a hardware supplier role [by third parties]," McCabe said.

Program Unclear

As a result, one of the biggest questions raised by the merger relates to the future of HP's Hard Deck program, under which the company sells directly to a designated set of customers, HP's sales organization takes the lead on such accounts and keeps resellers only when needed. Channel partners are also invoking word on a similar named-account program Compaq Computer Corp. had in place before the merger with HP.

HP has said it intends to keep the Hard Deck principle in place to let channel partners know exactly where it will sell

directly. But partners want to know whether HP plans to expand the number of customers it will go after directly and, if so, who the customers will be.

"It's OK if they expand the Hard Deck," said John Sheaffer, CEO of Sysix Technologies LLC, an HP reseller in Westmont, Ill. "[But] HP needs to tell us who's going to be in the

Hard Deck and what their management strategies are going to be [outside] the Hard Deck."

It is also important for HP to properly implement and execute its new strategy of having separate channel organizations for its enterprise systems and for volume products such as PCs, notebooks and handhelds, Sheaffer said. A similar initiative by HP a few years ago resulted in resellers having to do extra work to "gain traction with each organization," he said.

HP also needs to quickly

spell out the key field-level managers and account representatives of the respective channel organizations will be, said Geoffrey Lilien, CEO of Mill Valley, Calif.-based HP reseller Lilien Systems.

"We have a lot of accounts where we work with HP, and it is important to know who we are going to be working with," he said.

The two channel organizations were designed so that HP can support partners in a way that best aligns with the mix of business they do with HP, a company spokeswoman said.

Resellers will have to deal with only one channel organization instead of both, she said. In addition, HP won't change any channel programs for re-

sellers of both HP and Compaq for a period of 90 days, starting with the May 7 launch of the merged company, she added. ■

Finance Industry Vulnerable To Terrorism, Experts Say

Firms still working on recovery plans as attack threats loom

BY LUCAS MEARIAN

Amid recent warnings from Washington that more terrorist attacks are inevitable, some experts say the financial services industry is ill-prepared to handle a second disaster because it's still mired in disaster recovery following the Sept. 11 attacks.

Peter Vinella, CEO of Miami-based Meceta FS, an IT and management consulting firm, said many of his clients whose data centers were destroyed in the attacks on the World Trade Center are still working from their disaster recovery sites, leaving them with no operational or data backup capabilities.

But Damon Kovelsky, an analyst at Meridian Research Inc. in Newton, Mass., said he believes there are fewer data centers in Manhattan today than before Sept. 11. Most companies have since made concerted efforts to geographically

disperse their facilities.

"If someone flies another 747 into downtown Manhattan, in certain aspects, there would be less of an impact," Kovelsky said.

Financial services firms are less vulnerable to an attack because many brokerages and banks have relocated their IT operations to New Jersey, Kovelsky said, adding that

"no one is going to attack Jersey City."

Paul Honey, first vice president of global contingency planning at Merrill Lynch & Co., said many firms had set up their disaster recovery sites to handle no more than a few weeks of use. Merrill Lynch, whose headquarters are across the street from the World Trade Center, lost its primary site for about six weeks. It had set up secondary sites under a sixweek contingency plan, he said.

Merrill Lynch moved about 90% of its IT staff, roughly 8,300 employees, to alternative sites, where some work-

ers stayed for as long as three months. However, the bulk of its IT staff returned to headquarters within six weeks.

Cantor Fitzgerald LP, which lost 735 employees and its primary data center on Sept. 11, insisted that it was prepared for a disaster then and is even better prepared now because its data centers are more dispersed.

"The reality is that in order to have [a disaster recovery plan] work in a catastrophic scenario, you have to have used it before," said Matt Claus, chief technology officer at eSpeed Inc., a business-to-business online marketplace and the IT services arm of New York-based Cantor Fitzgerald.

Since Sept. 11, Merrill Lynch has performed a gap analysis of what it needs to respond to another disaster.

"We're building resiliency into our day-to-day operations, looking at our real-estate footprints, business models and technical standards. These are revealing things that don't get solved overnight and take a while to implement," Honey said. "But every day we get further away from Sept. 11, we get a little more resilient." ■

Protecting the Financial Marketplace

Here are some potential regulatory requirements that could buttress the industry's ability to react to disasters:

BETTER long-term disaster recovery plans and capabilities, both within individual firms and across markets.

GREATER security around the internal operations and disaster recovery capabilities of each firm.

RE-ENGINEERED intra- and interfirm processes, with less reliance on manual processes and paper.

BETTER real-time monitoring of industry activity, to discover market manipulation.

CENTRALIZED real-time recording of over-the-counter transactions.

DEPLOYMENT of dedicated and highly secure interbank communications networks, with a dedicated wireless backup.

SECURE industry network and applications protocols that enforce security on the access and transaction levels.

REAL-TIME trade confirmation and settlement.

FINANCIAL SPECULATION

Analysts ponder the impact of a strike against the U.S. financial industry

QuickLink: 30227
www.computerworld.com

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BY JAIKUMAR VIJAYAN

Hewlett-Packard Co. may have been quick out of the gate with details about its postmerger product and services road map, but the firm is still fleshing out details of its channel sales strategy.

The issue is important for users because it affects the way in which HP products will be sold and supported in the future, analysts said.

Companies such as HP, IBM and Sun Microsystems Inc. are all trying to expand their direct sales efforts on the hardware front, said Laurie McCabe, an analyst at Summit Strategies Inc. in Boston.

At the same time, they need to maintain channel relationships at the high end to help deliver complex technologies, she said.

"What vendors such as HP are trying to do is elevate themselves as much as possible into a primary contact position with customers, as opposed to being called into play in a hardware supplier role [by third parties]," McCabe said.

Program Strategy Unclear

As a result, one of the biggest questions raised by the merger relates to the future of HP's Hard Deck program, under which the company sells directly to a designated set of customers. HP's sales organization takes the lead on such accounts and brings in resellers only when needed. Channel partners are also awaiting word on a similar named-account program Compaq Computer Corp. had in place before the merger with HP.

HP has said it intends to keep the Hard Deck principle in place to let channel partners know exactly where it will sell

directly. But partners want to know whether HP plans to expand the number of customers it will go after directly and, if so, who the customers will be.

"It's OK if they expand the Hard Deck," said John Sheaffer, CEO of Sysix Technologies LLC, an HP reseller in Westmont, Ill. "[But] HP needs to tell us who's going to be in the

Hard Deck and what the engagement strategies are going to be [outside] the Hard Deck."

It is also important for HP to properly implement and execute its new strategy of having separate channel organizations for its enterprise systems and for volume products such as PCs, notebooks and handhelds, Sheaffer said. A similar initiative by HP a few years ago resulted in resellers having to do extra work to "gain traction with each organization," he said.

HP also needs to quickly

spell out who the key field-level managers and account representatives of the respective channel organizations will be, said Geoffrey Lilien, CEO of Mill Valley, Calif.-based HP reseller Lilien Systems.

"We have a lot of accounts where we work with HP, and it is important to know who we are going to be working with," he said.

The two channel organizations were designed so that HP can support partners in a way that best aligns with the mix of business they do with HP, a company spokeswoman said.

Resellers will have to deal with only one channel organization instead of both, she said. In addition, HP won't change any channel programs for re-

sellers stayed for as long as three months. However, the bulk of its IT staff returned to headquarters within six weeks.

Cantor Fitzgerald LP, which lost 733 employees and its primary data center on Sept. 11, insisted that it was prepared for a disaster then and is even better prepared now because its data centers are more dispersed.

"The reality is that in order to have [a disaster recovery plan] work is a catastrophic scenario, you have to have used it before," said Matt Claus, chief technology officer at eSpeed Inc., a business-to-business online marketplace and the IT services arm of New York-based Cantor Fitzgerald.

Since Sept. 11, Merrill Lynch has performed a gap analysis of what it needs to respond to another disaster.

"We're building resiliency into our day-to-day operations, looking at our real-estate footprints, business models and technical standards. These are typically things that don't get solved overnight and take a while to implement," Honey said. "But every day we get further away from Sept. 11, we get a little more resilient." ◆

Finance Industry Vulnerable To Terrorism, Experts Say

Firms still working on recovery plans as attack threats loom

BY LUCAS MEARIAN

Amid recent warnings from Washington that more terrorist attacks are inevitable, some experts say the financial services industry is ill-prepared to handle a second disaster because it's still mired in disaster recovery following the Sept. 11 attacks.

Peter Vinella, CEO of Alameda-based Neoris IS, an IT and management consulting firm, said many of his clients whose data centers were destroyed in the attacks on the World Trade Center are still working from their disaster recovery sites, leaving them with no operational or data backup capabilities.

But Damon Kovelsky, an analyst at Meridien Research Inc. in Newton, Mass., said he believes there are fewer data centers in Manhattan today than before Sept. 11. Most companies have since made concerted efforts to geographically

disperse their facilities.

"If someone flies another 747 into downtown Manhattan, in certain aspects, there would be less of an impact," Kovelsky said.

Financial services firms are less vulnerable to an attack because many brokerages and banks have relocated their IT operations to New Jersey, Kovelsky said, adding that

"no one is going to attack Jersey City."

Paul Honey, first vice president of global contingency planning at Merrill Lynch & Co., said many firms had set up their disaster recovery sites to handle no more than a few weeks of use. Merrill Lynch, whose headquarters are across the street from the World Trade Center, lost its primary site for about six weeks. It had set up secondary sites under a six-week contingency plan, he said.

Merrill Lynch moved about 90% of its IT staff, roughly 8,300 employees, to alternative sites, where some work-

Protecting the Financial Marketplace

Here are some potential disaster recovery requirements that could buttress the industry's ability to react to disasters:

BETTER long-term disaster recovery plans and capabilities, both within individual firms and across markets.

GREATER security around the internal operations and disaster recovery capabilities of each firm.

RE-ENGINEERED intra- and inter-firm processes, with less reliance on manual processes and paper.

BETTER real-time monitoring of trading activity, to discover market manipulation.

CENTRALIZED real-time recording of over-the-counter transactions.

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NEWS

BRIEFS

Palm Warns of Loss

Santa Clara, Calif.-based Palm Inc. warned that it will report lower-than-expected revenue for its fourth quarter, which ended Friday. The maker of handheld devices said it did about $230 million worth of business in the quarter, down from a forecast that it would have up to $300 million in revenue. Palm also said it will report a loss for the quarter instead of breaking even as it had hoped to do.

Payment Processor to Use IBM Systems

Columbus, Ind.-based Total System Services Inc. (TSYS), which processes credit card transactions and other electronic payments, signed a five-year systems and support contract with IBM valued at $194 million. TSYS will install IBM's zSeries mainframes and its disk and tape storage devices. IBM said the new systems will make TSYS one of its 25 top U.S. customers in terms of processing capacity.

Dataquest: Q1 Server Sales Down by 15%

Worldwide server revenue fell 15% year to year during the first quarter to about $10.5 billion, according to Dataquest Inc., a unit of Stamford, Conn.-based Gartner Inc. San Jose-based Dataquest had said in April that shipments of servers in the quarter were flat with last year's level. The drop-off in revenue points to a decline in the price of servers, according to the consulting firm.

Short Takes

THE INTERNET CORPORATION FOR ASSIGNED NAMES AND NUMBERS in Marina Del Rey, Calif., said CEO Stuart Lynn plans to leave when his contract expires in March. . . . Milpitas, Calif.-based QUANTUM CORP. will pay $5 million to Caldale, Minn.-based IMATION CORP. to settle an antitrust suit related to tape drives that was filed last fall.

Skills Shortage

IT skills shortage is a myth perpetuated by business and lobbyists trying to preserve the current employers' market.

"[The study] doesn't seem to jibe with the facts, so you question if there's a hidden agenda or just a lack of judgment," said Ray Hooker, a networking consulting engineer at Cisco Systems Inc.

However, ITAA spokesman Bob Cohen said the report is a forecast rather than an indicator of current conditions. A telephone-based survey of 532 managers across a variety of industries found that companies are struggling to find workers with technical expertise, domain knowledge and project experience, he said.

"People's frustration is understandable, because times have changed and it's more difficult to drive your career than it was in 1999 and 2000," said Cohen. "But you can't overlook what the requirements are or what the hiring companies' views are."

One factor fueling the uproar over the study is that the Arlington, Va.-based ITAA is one of the nation's biggest supporters of the H-1B temporary

foreign visa program.

Some critics charged that the skills shortage study was just an attempt to persuade Congress to raise the H-1B cap and flood the IT job market with lower-paid foreigners in order to drive down salaries.

Hooker said he's not opposed to the H-1B program and added that many foreign workers are better educated and more up to date on IT skills than their U.S. counterparts. But, he said, American workers with significant job experience who are equally or more qualified are being shut out by an oversaturated job market.

"We wouldn't want to allow undercutting of existing [U.S.] workers," said Hooker. "I respect [foreign workers'] skills, but a 25-year-old with two years' experience is still a 25-year-old with two years' experience."

Tom Scott, president of the San Diego Oracle Users Group, is one of many skeptics of the skills shortage who said he often sees phony job listings likely geared toward hiding the job shortage. Scott and others say they can tell the ads are phony because the job listings typically ask for an impossible combination of skills and certifications. "They want every acronym under the sun for $30 [an hour]," Scott said.

Another issue is an age-old

problem: human resources professionals who lack IT skills but are responsible for filling highly technical posts.

But that argument is always used when the market is down, countered the ITAA's Cohen.

"In good times, [recruiters are] brilliant, and in bad times, they don't know what they're doing," he said.

Different Perspectives

Indeed, the ITAA's contention that companies are having trouble filling jobs does have some backing. Hiring managers are split on the job-shortage/skills-shortage debate, with some supporting the findings that were detailed in the ITAA's report.

At Delaware Investments in Philadelphia, IT jobs are scarce — as are jobs across the company — because they're being filled only if they're deemed critical, said company spokesman Tom Gariepy.

IT job openings at Lockheed Martin Corp. are also down, though not as drastically as at other companies, said Don Peterman, director of employment for the company's Delaware Valley Regional Recruiting Center.

Last year, Bethesda, Md.-based Lockheed filled about 700 IT jobs, and it expects to fill about half that number this year, said Peterman. Since the

Factors Driving IT Job Shortage

- Corporate consolidation resulting in job cuts
- Former dot-com employees flooding the corporate IT market
- Slashed IT budgets that fund only mission-critical projects
- Employers cutting experienced, high-paid workers, and replacing them with younger, lower-paid workers
- IT departments pushing employees to work longer and harder
- Companies hiring temporary contractors and pushing work overseas

middle of last year, every job opening at the company has generated a flood of résumés, with more than enough qualified candidates, he added.

Still, finding qualified IT candidates to fill open positions is a big challenge, said Nicole Tucker, a recruiter at Philadelphia-based Peco Energy Co., a subsidiary of Chicago-based Exelon Corp.

"It's really tough for us to find very specialized people," she said, adding that applicants for the eight to 10 high-level IT jobs that open each year lack either degrees or business knowledge and project management expertise. The company often decides to hire its contractors for full-time jobs because they have developed the right skill sets while at Peco, Tucker added.

Kathy Walters, vice president of IT at Exelon's energy division in Philadelphia, said her unit is fully staffed now. But when positions do open up in the division, Walters said, she gets many résumés but few from qualified candidates.

"Finding the right match for what you have to spend is tough," Walters said. ¶

Converging Forces Drive Job Shortage

While IT professionals dispute the idea of a skills shortage, they say the job shortage itself is very real.

"If you longer the land of milk and honey," said Warren Mac-Queen, a Kansas City-area IT veteran who has been teaching programming courses at Johnson County Community College in Overland Park, Kan., and doing IT contract work since he was laid off from Sprint Corp. last fall.

Due to lean corporate budgets, many companies are filling only mission-critical positions. As such, they're consolidating operations and cutting jobs, oversaturating existing employees and forcing temporary contractors to steer their needs, said MacQueen.

MacQueen said he has seen many of his students drop courses because they can't balance schoolwork with the 60-to-80-hour workweeks that have become the norm.

"It's almost like demanded overtime," said MacQueen. "The job market's too tight to play games with a job at this point."

Age discrimination is another factor at play, said MacQueen. At Sprint, he was mentoring workers with three to six years' experience, but MacQueen, 55, who was earning a higher salary, was the one let go. "The magic age for IT workers in the industry is 25 to 40 years old, he said.

Tom Scott, president of the

San Diego Oracle Users Group, said he's amazed at how many highly qualified technology workers in his organization have experienced lengthy, fruitless job searches.

"I'm at a quandary," said Scott, who teaches an Oracle class at Mission Bay High School in San Diego. "I don't know what to tell the kids. I'd love to say, 'This is a great profession and you should go for it.'"

But the odds are that only five out of 30 of them would find work, he added.

At the very least, said Mac-Queen, the economy needs to stabilize so IT professionals will open their wallets again and stop trying to cut corners when it comes to labor costs.

— Melissa Solomon

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Credit Data Theft Shows Security Risks of Partnerships

BY JAIKUMAR VIJAYAN

The recent theft of 13,000 customer records from the systems of a major credit reporting agency shows the importance of ensuring that business partners are following strong data security practices, IT managers and analysts said.

Ford Motor Co.'s financing subsidiary disclosed last month that someone had used an authorization code belonging to Ford to illegally download personal information, including Social Security numbers and credit histories, collected by Experian Information Solutions Inc., which has its U.S. headquarters in Costa Mesa, Calif.

Although Dearborn, Mich.-based Ford Motor Credit Co. said it's not clear whether the unauthorized code use involved a hacker breaking into its systems, some analysts said the case serves as a fresh reminder that companies should mitigate their exposure to such security breaches both internally and at the companies with which they do business.

That means insisting on periodic security audits and vulnerability assessments of all business partners and third parties with which a company has IT links, said John Pescatore, an analyst at Gartner Inc. in Stamford, Conn.

Third-Party Caution

Watson Wyatt Worldwide performs security audits on all of its outsourcing vendors, said David C. Hollingsworth, director of enterprise applications at the Washington-based human resources and financial management firm.

"We're always concerned with security risks, whether it's with our own network or with services outsourced to a third party," Hollingsworth said. "For all our third-party arrangements, we have very specific requirements on physical separation, trust relationships and security procedures."

Portland Ore-based Providence Health System, which operates hospitals in four western states, keeps external log-ins to its systems disabled by default. External users must call and have the IT department enable access before they can get into the organization's servers, said David Rymal, director of technology at Providence Health System.

But companies sometimes fail to take such steps because of the additional cost and effort that's involved, said Pete Lindstrom, an analyst at Framingham, Mass.-based Hurwitz Group Inc. That's a mistake that could lead to lawsuits charging companies with failure to perform due diligence, Lindstrom warned. ∎

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BRIEFS

HP, Sun to Close U.S. Offices for Week

Hewlett-Packard Co. and Sun Microsystems Inc. both said they plan to close their U.S. offices during the first week of July in an effort to save money. HP's shutdown will affect its own facilities as well as the ones it acquired as part of its purchase of Compaq Computer Corp. But an HP spokesman said sales and support workers will be available "where required" to meet customer needs.

Nortel Cuts Q2 Outlook, More Jobs

Nortel Networks Corp. said its second-quarter revenue could be down as much as 5% year to year, a change from an earlier forecast that business would be flat compared with the year-earlier level. Brampton, Ontario-based Nortel also announced layoff projections for its optical networking components unit from 1,500 workers to 2,500 and said it may shut that operation up for sale.

Peregrine, Auditor Part Over Sales Deals

Peregrine Systems Inc., which is restating financial results for its past three fiscal years, dropped KPMG LLP as its auditor less than two months after hiring the New York–based firm. The move came after KPMG notified San Diego–based Peregrine that about a third of the $100 million in questionable sales transactions identified by the auditors were with KPMG itself or with its former IT consulting business.

Short Takes

Carlsbad, Calif.-based DOT HILL SYSTEMS CORP. said it will make private-label storage devices for SUN MICROSYSTEMS INC., which in turn can buy up to 5% of Dot Hill's stock. . . . Pure-based ALCATEL agreed to buy TELERA CORP., a Campbell, Calif.-based developer of voice self-service technology.

WorldCom Pins Hopes On IP Data Services

Despite pricing issues, Internet backbone key to company's turnaround efforts

BY MICHAEL MEEHAN

OVER THE LAST week, WorldCom Inc. last week said that Internet data services and IP virtual private network offerings are central to the company's turnaround strategy. But they acknowledged that its hand to make money on those services at the prices they are currently paying.

The embattled telecommunications firm is due to develop its full plan of action later this month. During a teleconference last week, WorldCom CEO John Sidgmore said he wants to sell off more than $1 billion in assets by year's end in order to raise cash and "make the company less complex." Various real estate and international business holdings are likely to be liquidated.

Sidgmore, who replaced ousted CEO Bernard Ebbers in late April, also repeatedly touted WorldCom's Internet backbone network and cited seeds growth in the number of corporate data services customers the company has signed up during the past 12 months.

But Sidgmore didn't promise that the turnaround plan will translate into a rapid improvement in WorldCom's financial results. "Ultimately, we need to prove we can take this company into a growth position again," he said. "That may not happen in the next near term. It's nuclear winter in the telecom industry right now."

Current pricing levels for network services aren't help-

ing, according to Sidgmore and other executives. For example, WorldCom's revenue from data and Internet services declined slightly during the first quarter on a year-to-year basis, to $2.75 billion.

Period of Adjustment

Ron Westmoreman, WorldCom's chief operating officer, said current charges of $800 per megabit for data center IP connections are below cost. He added that WorldCom is trying to convince corporate customers to sign shorter-term services contracts in order to give the company more flexi-

bility to adjust its pricing.

A spokeswoman said WorldCom wants to shorten some deals to one to two years, down from up to five years now.

Eileen Eastman, an analyst at The Yankee Group in Boston, said WorldCom is right that data and IP services are the wave to ride into the future. But she noted that users face migration issues on many of those services.

"People aren't going to rip out frame-relay systems that they've been running for years just because they can replace them with an IP product," Eastman said.

But when WorldCom details its turnaround strategy, Eastman said, users will be able to judge whether it has come up with a reasonable method of leveraging what Sidgmore called "the largest Internet backbone in the world."

RECOVERY PROCESS
WorldCom has made the following moves since company chairman John Sidgmore is its new CEO

May 17 Delayed annual shareholders meeting from May 23 to June 14	**May 21** Set plans to eliminate separate tracking stocks for its WorldCom and MCI groups	**May 23** Signed a new $1.50 accounts receivable securitization deal with its lenders

Intel Ends InfiniBand Chip Work, but Impact Unclear

New technology for server I/O still seen as promising

BY LUCAS MEARIAN

Intel Corp. last week disclosed that it's killing plans to develop controller chips for InfiniBand, an emerging I/O technology designed to support high-speed server clustering and connections between systems and storage devices.

But analysts said they're still bullish on InfiniBand's potential with users, even though Intel was one of the original developers of the specification

and a founding member of the Portland, Ore.-based InfiniBand Trade Association.

Because of Intel's stature and its early involvement in the development of InfiniBand, the company's decision "is an image blow. There's no question about that," said Jamie Gruener, an analyst at The Yankee Group in Boston.

Nonetheless, Gruener and others said Intel's pullout was strictly a business decision based on looming competition from other vendors that are developing faster InfiniBand chips than it had in the works.

Intel was bucking a single-wire, or 1x, version of InfiniBand, but companies such as

IBM and Santa Clara, Calif.-based Mellanox Technologies Inc. have said they plan to come out with chips that support a 4x speed (see box).

"[Intel] bet wrong on the 1x or 4x debate, and IBM and Mellanox bet correctly," said Chuck Foley, CEO of InfiniCon Systems Inc. in King of Prussia, Pa. "Even the giants can't do all things, and Intel finds itself vying against two very well-funded competitors that are far

ahead of it technology-wise."

InfiniCon is one of dozens of vendors that plan to deliver InfiniBand-based products within the next year. The company expects to ship a shared I/O subsystem in the third quarter that ties InfiniBand-enabled servers to Fibre Channel and Ethernet networks.

InfiniBand is a point-to-point architecture that lets I/O devices communicate on a dedicated channel in order to improve scalability, reliability and performance. The technology is envisioned by backers as a replacement for the Peripheral Component Interconnect (PCI) bus now used in servers.

An Intel spokeswoman said the company no longer plans to produce chips for InfiniBand host controller adapters. Instead, it will focus on PCI Express, a high-speed link for connecting different chips within individual servers.

JUST THE FACTS
I/O Download

InfiniBand is a switched serial I/O fabric designed to relieve the pipeline between servers and storage devices.

The technology is offered as a replacement for PCI-X buses, which have top data rates of 80 bytes/sec.

Signaling rates for InfiniBand are expected to range from 2.5Gbit/sec. (1x version) to 10Gbit/sec. (4x version)

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connected software from Microsoft offers you a complete set of tools, servers, and applications for transforming your business using your existing infrastructure. One software solution takes you all the way from code to client.

"If one word best represents the past year's most significant news story in software development, it would be .NET. If you were to look for two words, they would be 'Web services.'"
—SD Times, "Web Services. NET highlight 2001," Alan Zeichick, 1/1/2002

▶ All you need to create and use XML Web services:

- Microsoft Visual Studio .NET and the .NET Framework—the tools to build them
- The Microsoft Windows' Server Family—the platform on which to run them
- .NET Enterprise Servers—the application servers to deploy them
- Microsoft Office XP and the Office XP Toolkit—the applications in which to experience them

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pipe dream and pipeline.

Where your CEO's vision meets IT reality. It's one thing to map out the future. It's quite another to unlock the value in your infrastructure that will get you there. Fortunately, XML Web services built with .NET connected software make it a lot easier to connect the code and systems you already have to each other—and to the new stuff you need.

You don't rip out or replace legacy systems. But you do bring new capabilities and flexibility to your existing systems that allow you to leverage your investments far into the future.

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▶ How Trans World Entertainment cued up a new consumer brand in just six weeks. Using .NET connected software, they are connecting their 650 FYE retail music and video stores in 46 states; 25,000 in-store listening and viewing stations to servers housing 200,000 audio tracks and 10,000 movie trailers; and their Web customers to personalized content at FYE.com.

Data Feed	Product Catalog	Inventory System	Data Centers

New Apps	Customers	Retail Stores

".NET has enabled us to achieve widespread brand distribution across a broad range of touch points."

—Mark Hogan, VP of Marketing, Trans World Entertainment

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"We've already seen significant incremental revenues and expect the trend to continue as we leverage the .NET platform to strengthen and extend our business model."
—Peter Osbourne, Group Manager, Advanced Technology Group, Dollar Rent A Car

The result is a far more flexible infrastructure – one that reduces the separation between the elements of your business to just one degree. By connecting your customers, business partners, and employees directly to the intelligence they need, you streamline operations and make your business more agile, responsive, and productive.

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.NET connected software lets you build flexible, seamless connections between your back-end data and front-end systems. This allows you to close the loop with your customers, deliver more relevant content, and build more dynamic relationships.

▶ **Connecting** ......
.NET connected software helps you first integrate your own applications, and then quickly and cost-effectively integrate your systems with those of your business partners, vendors, and suppliers.

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.NET connected software makes it much easier to let employees unlock the information value stored in your infrastructure. Not only will they have access, they can also begin using powerful analytical tools to empower themselves and others.

One degree between you and your customers

▶ ROYAL CANADIAN MINT

Solution: Microsoft Windows 2000 Advanced Server • Microsoft SQL Server 2000 Enterprise Edition • Microsoft Commerce Server 2000 • Microsoft Content Management Server 2001 • BizTalk Server 2000

your business

▶ DOLLAR RENT A CAR

Solution: Windows 2000 Server • Microsoft Internet Information Services 5.0 • SQL Server 2000 • BizTalk Server 2000 • Visual Studio .NET • Microsoft Mobile Internet Toolkit

your employees

▶ COMPUSA

Solution: Windows 2000 Advanced Server • SQL Server 2000 with Analysis Services • ProClarity reporting client for store managers and corporate staff • MATRA Systems solution for importing data from IBM POS systems into SQL Server

How Royal Canadian Mint used .NET connected software to create new revenue streams. Founded in 1908, the Royal Canadian Mint was looking for new and better ways to reach out to customers for its evolving catalog of precious metal collector coins and jewelry. With .NET connected software they were able to create a next-generation e-commerce site that delivered dynamic content management, personalization, and advanced business analytics while drawing on information in a legacy database and feeding orders through an existing ERP system. Microsoft BizTalk® Server 2000, with native XML support, integrated the data seamlessly for smoother transactions and more efficient order processing. To see a webcast on redefining the online enterprise, visit **microsoft.com/solutions/msib**

How Dollar Rent A Car used .NET connected software to drive new business partnerships. Dollar Rent A Car is a world-leading car rental agency, with a fleet of 75,000 cars and more than 250 locations across 26 countries. They saw that integrating their VMS-based reservation system directly with partners would drive sales and reduce the cost of transactions. Using .NET connected software and BizTalk Server, they were able to develop an XML-based trading partner integration solution in weeks rather than months—a 75 percent reduction in development time. The same solution also helped Dollar to significantly reduce transaction costs with its partners. To get a resource and evaluation kit for this case study, go to **microsoft.com/business/casestudies/b2c/dollarrentacar.asp**

How CompUSA used .NET connected software to accelerate business intelligence. CompUSA had 228 retail stores, a services division, corporate sales, and a training division. Moving forward, they wanted to maximize the value of customer and sales data stored on a reporting system on an AS/400; an SAP system running on SQL Server 2000; Oracle databases; and several custom solutions. Using .NET connected software, CompUSA was able to extract their POS data and consolidate it in a central data warehouse where it can be analyzed in near-real time. So, store managers can see what adjustments are needed to meet opportunities as they arise. To see a video report on this story, go to **microsoft.com/SERVERS/evaluation/casestudies/compusa.asp**

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Microsoft

The real disaster occurs when

you're not prepared for one. It's a lesson you don't want to learn the hard way. Then again, it's not every day that a serious hurricane makes landfall at your data center. But after being forced to brave the fury delivered by "the storm of the century" in order to prevent total loss of mission critical data—the folks at the IT service center of Mitsubishi Chemical America, Inc. knew they needed a backup plan.

They turned to HP. Rather than recommend a totally redundant backup data center in another location, HP worked with MCA on a more creative solution involving HP servers, storage, software and support services.

Together, they developed a plan that not only involved on-site recovery services but actually utilized HP's own disaster recovery center. HP even helped MCA through several disaster recovery rehearsals—just to make sure there would be no surprises next time the unthinkable happened.

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MARYFRAN JOHNSON

Celebrating IT Heroes

THIS TIME AROUND, there is a greater poignancy to the theme of our annual *Computerworld* Honors program: "The Search for New Heroes." The everyday miracles accomplished by IT organiza-

tions everywhere — so easy to overlook in this battered-down economy — clearly play a more notable role in the weightier concerns of a changed world.

Tonight in Washington, at a fancy awards ceremony in a beautiful old building, *Computerworld* will name a handful of winning IT projects and programs, winnowed from 59 international finalists. They cut across a broad swath of industries, from business, manufacturing and medicine to academia, government and science — all of them nominated by the CEOs of leading technology companies. But whether these finalists win and take home a lovely hunk of crystal doesn't matter much, really. What everyone should remember is the innovation, the energy and the creativity behind every one of these IT projects.

Starting on page 26, we've profiled a few of the finalists in this year's Honors program. Just reading the brief descriptions of some of their accomplishments makes your throat choke with emotion and remembrance. Consider, for example, the team of IT managers and engineers from the Port Authority of New York and New Jersey who kept traffic flowing — and emergency crews moving — in the aftermath of the Sept. 11 attacks. They worked 24/7, slept in their cars and fought back their own grief for 75 colleagues lost in the collapse of the World Trade Center towers. They probably never felt like IT heroes. They saw work that needed doing, and so they got it done.

From the other side of the world, we will honor projects that advance our global understanding. Like the technology-based distance learning made possible to 15 sub-Saharan countries through the African Virtual University. Or the Rhinowatch project, the first full-blown census of the rare white rhinoceros, accomplished through pattern recognition of digital images.

On the medical frontier, we'll admire the work of Operation Lindbergh, which has broken new ground in enabling robot-assisted telesurgery across the Atlantic Ocean. Using advanced communications technologies, the actions of a French surgeon based in New York were transmitted to a Strasbourg operating room, then the video image was

bounced back to New York in less than a fifth of a second.

In the field of techno-science, we'll highlight the work of astrophysicist Geoffrey Marcy at the University of California, Berkeley, and the way the customized code and algorithms he and a colleague created eventually led to the discovery of dozens of planets beyond our solar system.

Closer to home, we find our everyday IT heroes behind the technology that built www.icouldbe.org, where hundreds of career mentors and guidance counselors are now available online to counsel at-risk teenagers; or at the U.S. Department of Defense, whose Java-based security project will distribute 4.3 million multifunction smart ID cards to military and support personnel.

Our search for high-tech heroes has been under way since the *Computerworld* Honors program debuted in 1988. Each year, the technologies have scaled to greater heights and enabled more dazzling displays of the power and promise of IT. But never once have they outpaced the human spirit behind them. ∎

To find a complete archive and more information about the Computerworld *Honors Program, go online to* ⊕ **www.cwheroes.org**

THEY DIDN'T MENTION THIS FRESHMAN YEAR.

www.jsinman.com

PIMM FOX

IT, Business Intelligence In Harmony

THERE'S SO MUCH noise generated by experts chanting the "information is key to business success" mantra that it's a mush of jazz, rock 'n' roll and classical instead of a single piece of music.

Certainly information is a vital part of every business, but we all wince at the sight of piles of reports on our desks. Now IT aims to pick up where those stacks of green-bar computer printouts left off.

No longer will anyone comb through pages to assemble charts, tables and graphs of sales, revenue and expense reports.

Business intelligence vendors such as Cognos, Crystal Decisions Inc. and Business Objects Inc. combine various Internet-based technologies with thin clients to push business reporting tools further down into a company's operations, making it possible for line personnel to have the reports they need along with sophisticated analytics.

At ice-cream maker Ben & Jerry's, access to graphically presented reports by departments such as marketing, sales and manufacturing comes courtesy of business intelligence software from Business Objects. Hand-copy reports are out. Outwardly facing Web-based connections to back-end systems are in.

A line manager checking a parts inventory or an accounts-payable clerk looking to see which invoices must be paid don't need two separate IT systems. For strategic thinkers, access to different versions of a report (who says you can't slice and dice information?) means there's no excuse for departments not knowing the overall picture.

Connecting to larger-scale ERP and CRM systems from Siebel Systems,

For more columnists and links to archives of previous columns, go to ⊕ **computerworld.com/pohnson**

NEWSOPINION

SAP and PeopleSoft is easier thanks to TCP/IP connections and the general openness of LANs and WANs. As a result, more people have cost-effective access to the network.

Tools from vendors such as Crystal Decisions can be a part of the IT infrastructure if your company lives by the reports it uses.

But there are some IT details to investigate. How does the business intelligence system schedule data extraction? Can you gather data from multiple locations? How about from disparate systems? Determine how difficult data integration will be before you go soft at the knees drooling over the myriad reports and formats you can click through.

Check for sign-on functions that integrate with existing security roles, and ask about database drivers (ODBC, MDX and COM objects) to make sure yours are supported and work.

Business intelligence can be a harmony, but for that to happen, IT's got to pick up the conductor's baton. ▶

The Chemist prowls the deck, screaming at his crew. "Do things!" This sounds frighteningly familiar to many IT workers.

Walk through IT shops today and you don't find much joy. Many CIOs' direct reports and next-level IT managers are stressed out, physically exhausted and concerned that top executives aren't doing the right thing or taking the company in the right direction. This is the workplace presided over by the We're Too Busy to Look Where We're Going boss, as individual so absorbed with managing senior management's perception of IT's execution of the little things that he has no time to think about or discuss the bigger picture of where IT is going and why. Perpetually focusing on "whats" and "hows" rather than "whys" and "wheres" can destroy souls.

The When the Work Is Done, I Promise boss recognizes the value of career and skills development. But that's promised to key reports only when the workload becomes more manageable. Unfortunately, the IT workload, like the universe, is expanding at an ever-accelerating rate. The customer continues to reinvent, reengineer, restructure, privatized, customized and economized (read: afford-ably) 24/7 support, and fulfilling that consumes an immense amount of time and labor.

The bottom line is that good people will migrate to good work environments. If yours isn't a good environment, you'll lose your good people. So, here's my advice to companies and their IT organizations:

1. Grow a backbone and dump bad leaders.

2. CIOs should proactively develop the next generation of leaders by getting them to focus on next-generation problems.

The typical CIO pursues his workload into three boxes "Do Now" (such as, cut costs), "Do Next" (such as, preroll enterprise security strategy to senior management) and "Do Later" (such as, deploy kilometric EIS/access management tools). Each IT organization needs to launch a "Next Generation of IT Leadership" program, a forum in which direct reports and next-level managers can think about future IT problems, then suggest ways they might solve them.

By combining career development and empowering IT managers to help chart a course for the organization, a CIO can create new energy and enthusiasm and creatively address ahead of time problems his organization and company might face in the future. That would go a long way toward avoiding or shedding a "jerk" tag. ▶

THORNTON MAY

Steps Toward Improving IT Bosses

IN 1997, I examined why IT professionals in established companies changed jobs. Managers erroneously believed that the top reason people quit was money. They were wrong then, and they would be wrong today. I find that the top reason people quit can be summed up in this sentence: "I won't work for a jerk."

In corporate IT, "jerk bosses" come in three flavors, which I categorize in descending order of "jerk intensity":

■ The "Bad Leader" jerk, the uber-jerk of the IT workplace.

■ The "We're Too Busy to Look Where We're Going" jerk, a middle-of-the-road kind of jerk — not inconsequent, simply myopic and self-absorbed.

■ The "When the Work Is Done, I Promise" jerk. He's not really a jerk, just a hard worker who can't keep up with the pace.

A poignant example of a Bad Leader jerk comes from David Masiel's new novel, 3382 kHz, (Random House), in which the reader meets a tugboat captain known as the Chemist.

READERS' LETTERS

The Navy and Its Intranet

YOUR RECENT article on the status of the Navy/Marine Corps Intranet (N/MCI) program did a great disservice to the Department of the Navy, EDS and your readers [QuickLink: 29845]. In reality, the program is on solid footing. EDS has successfully passed the mandated testing phase for the program, and the Department of Defense earlier this month granted the Department of the Navy authority to order an additional 100,000 seats. While there are significant burdens to clear in a program of this size and scope, we have cleared them and are moving toward full implementation.

Despite both the Department of the Navy and EDS repeatedly explaining to your reporter the proper context of a single memo, you chose to take this memo out of context and portray it in an inflammatory manner. Several other news organizations looked at the same memo and concluded that its contents needed to be

placed in their proper context. While they published balanced accounts, your approach was unfair at best.

Rick Rosenburg
EDS client executive
N/MCI program
Herndon, Va.

A's MUMS has correctly diagnosed the cultural change that must be implemented before N/MCI will succeed. As he said in your article [Quick-Link: 29642], the biggest cultural challenge is the re-placement of local control with centralized policy, standards and control of resources." Unfortunately, what Mums and other leaders don't seem to recognize is that a large-scale, long-term experiment in centralized policy, standards and control of resources took place between 1917 and 1949. The results were a dismal failure, since the centralized decision-makers couldn't possibly know enough about the needs of the people to make good choices. Visible, powerful organizations and people received sufficient resources; all the rest were

ignored. That appears to be happening in the process of the N/MCI transition. Simple requests are being ignored or put on hold, necessary tools are being consolidated out of existence, and useful programs are being eliminated out of a numbers-driven desire to "reduce legacy applications" without detailed knowledge of how or why they are being used. I am in the trenches and working to provide good IT support to the workers in my organization, but I must admit that doing so sometimes requires skills that we used to call "cumshaw" when I was going to sea. For readers who aren't well versed in Navy slang, cumshaw is a way to get a job done without going by the book.

Credit: Rod Adams USNR
Washington

What Certification Does

YOUR STORY on the worth of Java certifications [QuickLink: 29401] missed the point. Certification doesn't measure how experienced you are in developing software, nor

does it illustrate what kind of worker you are, how you handle stress on the job or how you interact with co-workers. That's what résumés, interviews and references are for. Attaining certification at Java technology demonstrates your knowledge of the technology and all its facets. Java certification can provide some assurance that a consultant has knowledge of the platform. Does it mean he's a hire expert? No. It means he has a well-rounded understanding of the basics of the platform.

Eric Shaffer
Senior technologist
RemoteSite Technologies Inc.
Albany, N.Y.

This year's Computerworld Honors f
to apply the strength of technology to

The Powe

PORT AUTHORITY OF NEW YORK AND NEW JERSEY

IT Team Goes Above and Beyond In Sept. 11 Aftermath

To help keep traffic flowing, IT engineers and managers worked to bring E-ZPass back online

BY MAT HAMBLEN

Among the scenes of perseverance in the face of tragedy that unfolded on Sept. 11 was the tale of IT workers at the Port Authority of New York and New Jersey who struggled to restore a piece of normalcy to the city while dealing with their own personal loss.

When the first jetliner struck the North Tower of New York's World Trade Center that morning, it tore into Port Authority headquarters, which housed 2,000 staffers and the central host servers for the E-ZPass electronic toll collection system. When the North and South towers collapsed, 75 Port Authority workers were among the more than 2,800 who perished.

In the hours and days that followed, a team of 15 IT managers and engineers banded together to overcome emotional trauma and logistical and communications nightmares to recover the toll system, helping to ensure the flow of traffic, including emergency vehicles, into and out of Manhattan.

"Certainly, getting E-ZPass back was useful for us to get revenue back. But symbolically, the restoration had greater value," says Ernesto L. Butcher, the Port Authority's chief operating officer. Restoring the system was evidence that the region and the agency were "getting back to normal," he says.

Included in the estimated $3.5 billion in buildings and equipment lost that day were the two Compaq Computer Corp. Alpha 4100 E-ZPass host servers. On a normal day, the E-ZPass system wirelessly captures more than 340,000 toll transactions from 74 traffic lanes on several New York and New Jersey bridges and tunnels — about two-thirds of the total vehicles passing between the states. Were the systems not quickly restored after Sept. 11, those tollbooths might have been mired in traffic, delaying the emergency crews and recovery trucks hauling away debris, says Walter Kristlius, E-ZPass program director.

Routers and TI connections between the host server and the toll lanes, and between the host and customer service center, were lost. Phone lines and cellular connections were crippled.

But the Port Authority and its contractor, ACS State and Local Solutions Inc. in Washington, had designed a system to handle such interruptions. Each E-ZPass lane was equipped with a reading device, an antenna and a ruggedized computer capable of storing days of transactions.

The Port Authority had drilled for disaster recovery, a precaution that wasn't undertaken at enough companies, says Zeus Kerravala, an analyst at The Yankee Group in Boston. "Most companies didn't have a backup plan or didn't test it and take it seriously."

The 1993 bombing of the World Trade Center had spurred E-ZPass engineers to work around recent data from each toll lane — sleeping in their cars and fighting back emotion. "There were tears coming out of your eyes, but there was a certain thing you had to do, and it overrode the worries," Kristlius recalls.

Within 72 hours, the backup was reconfigured and transactions were again accepted. The team also altered the system to count all toll fees for several days following the disaster. ∎

MANAGING IN A CRISIS

Read how the leadership took at Port Authority IT managers were put to the test in the days following Sept. 11.

QuickLink: 30100
www.computerworld.com

inalists found new ways

real-world situations.

r of IT

2002 Finalists

GOVERNMENT, ENERGY & AGRICULTURE

■ Bentsima & Galloway Consult: Geographic information system maps are distributed electronically every day to support the response to the outbreak of foot-and-mouth disease.

■ Entercomatic: Accurate identification of white rhino by pattern recognition of digital images of their footprints enables the first-ever census of these rare animals.

■ The Greenery International: Total integration of the supply chain allows Dutch-grown produce to be sold in New York and Tokyo within 14 hours of when it was picked.

■ Wilderness Technology Alliance: The education resources of federal lands and historic monuments in the U.S. are made available to public learning institutions.

■ TXU Energy: The first business-to-business portal in the utilities industry improves the way commercial customers manage their energy consumption and costs.

FINANCE, INSURANCE & REAL ESTATE

■ BenefitMall.com: An online employee-benefits exchange allows brokers serving companies with 100 employees or less to shop for plans from hundreds of carriers.

■ Cigna HealthCare: Equity systems applications released throughout 2001 have automated more than 50% of administrative transactions.

■ eProperty Tax: An automated application of property tax procedures of more than 5,000 local jurisdictions lowers the cost of administering tax computations.

■ HDFC Bank Ltd.: Aggressive use of IT is helping to establish the viability of private banks in India, where banks are primarily operated in the public sector.

■ Household International Inc.: Loan agents work directly with customers to automate the loan approval process, often generating a response in seconds.

GOVERNMENT & NONPROFIT

■ Defense Manpower Data Center: The U.S. Department of Defense keeps smart cards that allow for secure physical and computer access (see story, page 28).

■ InvisiNet.org: Handhelds at career centers communicate online with urban and rural job-link teams, alleviating the shortage of mentors and guidance counselors.

■ Oklahoma State Department of Human Services: System allows parents to check their children in and out of child care electronically and provides real-time data to state agencies and correctional personnel.

■ Shanghai Social Security Card Service Center: A network of more than 10,000 terminals provides access to personal information for citizens in an area of 3,700 square miles.

■ Technology Works for Good: Integrated consulting services, educational events and peer networking help nonprofit leaders deliver their vital services to the community.

■ The Norsk Foundation: Three-dimensional software creates a detailed virtual model of the human nuclear substance *Nurst*, analyzing the operation of retrieving it from the ocean floor before it contaminates the waters.

UNIVERSITY OF CALIFORNIA, BERKELEY

Scientists Develop Algorithms to Discover Extra-Solar Planets

Technology led one astrophysicist to boldly go where none has gone before

BY GARY H. ANTHES

"People thought we were a little crazy," recalls astronomer Geoffrey W. Marcy. "When we told them we were going to look for planets around stars, they'd kind of look down at their shoes and scuffle a little bit."

Finding planets outside of our solar system seemed next to impossible in 1984 when Marcy began his search. Planets at great distances are just too small and dim, compared with the stars they orbit, to be seen by even the most powerful telescopes. Indeed, Marcy worked for 11 years before finding one.

But the former skeptics don't stare at their shoes anymore. Marcy, director of the Center for Integrative Planetary Science (CIPS) at the University of California, Berkeley, has found 52 of the 86 known "extra-solar" planets. He has won a slew of prizes and medals for his work, and he may be the only astrophysicist ever to appear on the *Late Show With David Letterman*.

It has been known for years on theoretical grounds that a planet orbiting a star would cause a slight perturbation in the gravitational field of the star, producing a tiny shift in the spectrum of starlight emitted. The problem was that this Doppler shift is so slight that it's virtually undetectable. Marcy saw the solution not in better telescopes but in better computer software.

Marcy and a colleague, Paul Butler, developed algorithms and wrote 50,000 lines of code to model the expected Doppler shift, then used statistical methods to compare this "synthetic" spectrum with observed spectra. "We spent thousands of hours in front of computer terminals to write code to do various tasks," Marcy says. "There was nothing we could take off the shelf."

COMPUTERWORLD HONORS

The model resolved in Doppler shift measurements of unprecedented accuracy, good enough to detect the passage of a planet between its star and Earth. "It's one of the most important discoveries of the last 100 years," says Frank Drake, chairman of the board of trustees of the SETI Institute in Mountain View, Calif.

Early in the project it took six hours of computer time to process the data from a 10-minute observation of one star. CIPS now uses 20 high-end workstations from Sun Microsystems Inc. to process the same data in about 10 minutes.

But Marcy had to invent ultra-efficient data reduction algorithms as well. "For many years we didn't have an algorithm that was good enough, but we could see ourselves slowly but surely improving," he says. "It was a trying period, to put it mildly."

"It's a textbook example of how to do science," says Drake. "Marcy was dedicated, he made careful measurements and was very careful in the analysis of the data. He knew from Day 1 it would be a long time before he got results, but he stuck with it." ∎

U.S. DEPARTMENT OF DEFENSE

Military Pioneers the Use of Multifunction Smart ID Cards

Common Access Card helps reduce paperwork and ensure secure systems

BY EUGENE A. DEMAITRE

Nowhere is security, portability and scalability more important than at the U.S. Department of Defense (DOD). By the end of next year, all 4.3 million U.S. military personnel, civilian DOD employees and onsite contractors will be using one card for everything from logging into shared workstations to getting food at the commissary.

According to Mary Dixon, director of the DOD Access Card Office, three programs converged in the Common Access Card (CAC) project: the development of a digital signature for electronic transactions, a public-key infrastructure (PKI) token for network security and a smart card to enable re-engineering of business processes. A successful one-year pilot test in Hawaii paved the way for CAC use by all branches of the military.

The chips on the smart cards each have 32KB of memory and use the Java Card operating system and the federal government's interoperability specification. This specification allows multiple vendors to provide the cards, readers and middleware for about $10 less per user than for the previously used PKI-only cards, which ran about $50 each.

"Adoption of the Java open-card standard, rather than a proprietary technology, will set a trend," says Prianka Chopra, a smart card analyst at international consulting firm Frost & Sullivan Inc. in San Jose.

The CAC also incorporates "migration technologies" such as bar codes and a magnetic strip to ease the transition from legacy systems, says Dixon. More than 900 sites worldwide that issue the cards needed to be upgraded. "As a result of using the existing ID card infrastructure, the previously planned PKI infrastructure could be significantly reduced," she says. "[Getting] both an ID card and PKI credentials [is] now a one-stop operation, generally requiring not much more time than it took previously to get just the ID card. [That saved] almost 30 minutes per person."

Another challenge for the DOD was creating interoperability specifications. "Is the spec perfect? No," says Dixon. "But does it work? Yes. We decided to do what we can first, then improve upon it."

The PKI token is a hardware-based authentication method for logging into a network or encrypting or decrypting e-mail. The Web-centric approach also allows the DOD to use the card as a strong authentication to legacy or new databases and Web sites while minimizing the amount of information that has to be stored on the card, says Dixon. The CAC is also the first departmentwide identification for civilian DOD employees, she adds.

The CAC is "exemplary in terms of security, technology and portability," says Randy Vanderhoof, acting president and CEO of Smart Card Alliance Inc., an industry group in Princeton Junction, N.J.

The CAC marks an unprecedented "push to interoperability" and meets the challenge of distributed, decentralized and secure smart card issuance, adds Dixon. It's also the largest deployment of open, multiapplication smart cards, which Chopra calls a "model for U.S. smart card development." ∎

SIEMENS AG

Unilingual System Allows Entry to World's Financial Markets

Single format and currency save the electronics company $50,000 a month

BY MELISSA SOLOMON

With $75 billion in revenue, 120 subsidiaries and 460,000 employees around the world, Siemens AG has been accustomed to being on solid footing. So when in cash flow began to ebb a few years ago and analysts started giving it low marks, the Munich, Germany-based electrical engineering and electronics firm took action.

The plan was simple: Gain access to money from the richest country in the world through a listing on the New York Stock Exchange, says Hermann Giehrl, director of IT at Siemens' finance department.

But that was easier said than done.

Up until that time, Siemens had been regulated by German accounting laws. But to be listed on the NYSE, it needed to comply with the U.S. Generally Accepted Accounting Principles (GAAP). To do so,

MANUFACTURING

∎ **Agilent Technologies Inc.:** Consolidation of operating groups into a worldwide IT function drives costs down and frees resources for investment (turn story, page 30).

∎ **Cooltex Kestrec:** An e-business in a home construction project are completed, a contractor sends data via a handheld device, initiating payment and updating the private Web site where homeowners can view a project's progress.

∎ **Colgate-Palmolive Co.:** The consumer goods manufacturer manages its business on one system with the same information in 50 countries, thus lowering costs.

∎ **Siemens AG:** Europe's largest consolidation of legal and management reporting allows a company to meet requirements of multiple exchanges (see story at left).

∎ **Toshiba Corp.'s Semiconductor Company:** Order consolidation allows daily master planning and improved responsiveness to 3,000 orders per day.

∎ **VF Corp.:** Weekly decisions on garment production volumes are managed by supply chain management systems, significantly reducing inventory levels.

MEDIA, ARTS & ENTERTAINMENT

∎ **Canadian Broadcasting Corp.:** Bilingual Web access to Canadian history, supported by robust media asset management tools, helps to ensure the Canada's past will be preserved well into its future.

∎ **Doodle Black:** First-ever use of a new publishing technology allows closer work between a magazine's designers and journalists for more efficient production.

∎ **JAK Films:** Technology brings movie storyboards out of the black-and-white drawing era and brings animation, texture and mood to the earliest stages of production.

∎ **Mauromedia Inc.:** The vector-based Flash format enables rich Internet content and applications, allowing companies to deliver better user experiences with significant return on investment.

∎ **MeMoMedia Inc.:** Unique tele-oriented programming available within 48 hours of the Sept. 11 tragedy has given more than 1.6 million Web site visitors (mainly children ages 7 to 14) a place to share their feelings.

∎ **Spook.com:** Interactive tools extend the experience for viewers of the popular TV program, allowing them to participate in an active community for support and friendship.

∎ **Shanghai Wenhui Xinmin News Group:** Aggressive management of one of China's largest business networks requires the efficient production of three daily newspapers, seven weeklies and four magazines.

MEDICINE

∎ **Bristol-Myers Squibb Co.:** Innovative decision-support technologies expedite the discovery of new drugs by allowing scientists to simultaneously test compounds in multiple experiments.

∎ **Dell Computer Corp.:** More than $500,000 of donated computer equipment was configured, manufactured, delivered and installed at the Red Cross within days of the Sept. 11 attacks.

∎ **Epidian Inc.:** Minimally invasive endoscopic procedure transforms spine fusion from a highly complicated surgery reserved for serious disorders to a routine outpatient procedure, dramatically lowering costs and improving recovery times.

∎ **INCAN/STRS:** First-ever home-robotic telesurgery is made possible by advanced communication and robotics technology that transmitted the actions of a surgeon in New York to a Strasbourg operating room and returned the video.

2002 Finalists

Continued from page 29

image in New York in less than one-fifth of a second.

● **MedlvaLogix:** Direct entry of medical prescriptions into a handheld application eliminates errors associated with handwriting and fits into doctors' regular work processes.

● **University of Pittsburgh Medical Center:** Limiting the incision size for heart surgery and eliminating the heart-lung machine combines advantages of catheter techniques with the superior outcomes of coronary bypass techniques.

● **Wellmont Health Systems:** Central storage of high-resolution medical images makes them available instantly at any hospital, eliminating delays in diagnosis.

SCIENCE

● **Cabera Genomics Group/Whitehead Institute/ Soeger Center:** An array of more than 800 high-performance processors enables the mapping and sequencing of the human genome, opening a new era in biotechnology.

● **Connecticut State Police Department:** Advanced enhancement of bite-mark images from crime victims allows first-ever matching with suspect teeth patterns.

● **Stanford Linear Accelerator Center:** The world's largest object database supports the use of 450TB of data about electron-positron collisions to explain why the universe seems to have more matter than antimatter.

● **The University of Leeds:** Detailed cell- and tissue-level models of heart behavior yield understanding of normal and abnormal heart tissue and arrhythmias, leading to improved techniques for treating heart disease.

● **University of California, Berkeley:** Parallel processing of radio telescope data on the unused cycles of 3.5 million home computers allows data from a wide band of the sky to be scanned every six months.

● **University of California, Berkeley:** A decade of refinement yields software algorithms sensitive enough to detect the infinitesimal changes in light caused by planets orbiting distant stars (one story, page 29).

TRANSPORTATION

● **Delta Air Lines Inc.:** A dynamic digital network constantly receives, stores, organizes, filters and distributes data to ensure that employees and travelers receive clear, consistent, timely and updatable information.

● **Pratt & Whitney:** A single enterprise system integrates the aerospace engine manufacturer's worldwide operations with its suppliers and customers.

● **The Boeing Co.:** A cluster of PC processors is used to model the behavior of a new generation of rockets, lowering design costs and improving product reliability.

● **The Port Authority of New York and New Jersey:** Rapid recovery from the loss of an automated toll system central computer helped to keep traffic flowing smoothly, aiding Sept. 11 recovery efforts (one story, page 27).

● **Translink.com LP:** The first online travel company puts consumers in control by offering comprehensive travel options at the customer's fingertips.

Continued from page 29

Siemens' financial reporting systems had to accommodate both European and U.S. accounting rules, so IT applications had to be simplified to operate more efficiently and accurately in global markets, and the company needed to teach its workforce an entirely new way of doing business.

In March 2000, the company kicked off the Enhancement of Siemens Processes in Reporting and Information Technology, or ESPRIT. At the core of the project was a new Enterprise Controlling module from SAP AG.

The system replaced more than 2,500 decentralized applications and integrated the 16 applications used by Siemens' corporate finance department into a single global application. That application is based on GAAP standards, but it translates data into the complex German accounting rules.

In March 2001, the company took its place on the NYSE. In addition, the system has helped Siemens provide more timely, complete and accurate financial reports, says Giehrl. Through Web-based data warehouse and management tools, employees in 190 countries, who speak a variety of languages, can enter financial information using a single format and currency, he explains. And thanks to about 650 validation rules built in to the system, incorrect data can no longer find its way into financial reports, says Giehrl.

In terms of cost savings, the system has enabled the company to cut back on its annual expenditures for hardware and software and eliminate its development department by switching from a homegrown system to a standard package, says Giehrl. So far, that has translated into cost savings of about $50,000 each month, he says.

According to J. Spitzy, an investment analyst at New York-based Lehman Brothers Holdings Inc., the information released last year "definitely showed a major improvement in Siemens' ability to deliver appropriate insights into their group performance." ▶

AGILENT TECHNOLOGIES INC.

IT Consolidation Puts Unaligned Projects On Chopping Block

Standard, integrated applications reduce operational spending by 23%

BY KATHLEEN MELYMUKA

When Agilent Technologies Inc. in Palo Alto, Calif., spun off from Hewlett-Packard Co. in November 1999, its 2,500 IT employees were dispersed over three businesses in 40 countries. Each area had its own IT infrastructure, operations, applications and staff. A portfolio of 1,500 applications inherited from HP was eating up 80% of the IT budget, and the remaining budget was scattered among too many local priorities to show much bang for the buck.

Vice President and CIO Marty Chuck knew there was a better way. In November 2000, he began an initiative to consolidate IT.

The challenges were huge. Previously autonomous managers had to accept corporate decision-making, and many pushed back. "It was very difficult," Chuck admits. But Chief Operating Officer Alain Couder put his authority behind the "One IT" initiative, and executives were clear about changes they wanted.

"Once you set a clear vision, I have a high intolerance of things that don't align," Chuck explains. "We are all empowered to call things out and trim what isn't helping us win."

Executives consolidated all IT projects and proposals into one plan, rated them on alignment with the business and pulled the plug on many. Stakeholders didn't like it. "I got a lot of hate mail," Chuck says. "But that just hardened my resolve. You have to have the skill and the will to drive these things."

Moving from 1,500 applications to a few standard systems is a continuing technical challenge, and IT employees worry about the portability of their own skills, Chuck says. He meets those concerns with candor and lets his IT people decide where, how and if they'll fit in. "We are very open and honest about what the organization will look like, what the applications portfolio will look like, what we see coming," he says.

By November 2001, a global, centralized IT was in place. It has reduced operational spending by 23% ($160 million over 18 months). The savings are funding the gradual replacement of old systems with standard, integrated applications. New desktop policies have saved the business unit an additional $50 million, and in fiscal 2001 alone, Agilent avoided more than $300 million in expenses by saying no to unaligned projects.

Agilent's strong, central governance made all the difference in this effort, says Barbara Gomolski, a San Diego-based analyst at Gartner Inc. "Lots of companies forget about the management underpinnings, and it doesn't work," she says. "Agilent started with that foundation."

Gomolski says any company could benefit from aspects of the One IT approach, at least for commodity applications and services. And while Chuck says it might not make sense in an autonomous holding company, in an integrated enterprise, "it drives out waste and cost and gets people focused on strategic goals."

But be prepared for a long haul. "The savings we got was not due to one or two things; it was due to 150 things," he explains. "We've been on a dead run for several years. We kicked over every rock. And we're not done." ▶

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BUSINESS

PAUL A. STRASSMANN

Playing 'Survivor'

IN THIS ERA of lower corporate profits and tight IT spending, CIOs' careers are on the line when they get grilled during periodic budget reviews. Unfortunately, the CIO's survival kit isn't well stocked with credible analytic methods that will answer the supreme question: How can a CIO prove that IT will deliver a significant contribution to improved profits?

When CIOs prepare for budget reviews, they must overcome rising skepticism about their ability to link IT to improved results. But there is no prescription for how to survive a budget review. As a CIO who managed to get approval for many spending proposals from 1961 through 1993, I found that there are three tests one must pass to be invited back for more budget torture.

The Microscope Test. First, the CIO must propose operational cost cuts in the IT infrastructure, software maintenance and expenses for network services. The CFO knows all about Moore's Law and will start a budget review by requesting an 18% cut because that's the number computer gurus parade before executives when trying to impress upon them how computers are getting cheaper every year.

Second, the CIO must document the ROI for all proposed IT projects that would contribute to reducing corporate assets, increasing revenue, improving market share, reducing production costs or cutting corporate overhead. This can be accomplished only if you compare a "base case" (such as doing nothing) to a projected discounted cash flow over the expected life of every investment. The CFO will make sure that the projected savings are then locked into the corporate operating plans so he can compare actual quarterly results to the new performance targets.

The Window Test. This involves an examination of how a firm stacks up against its peers and competitors. First, the CIO must add all IT costs (including user expenses), such as recovery from systems crashes, systems training expenses and work-inhibiting downtime. The costs must then be compared to IT spending at firms that employ a comparable number of information workers, manage similar ratios of desktops to employees and display similar financial characteristics such as profits-to-revenue or equivalent ratios of transaction costs to cost of goods. Then, you can answer the CFO's perennial inquiry about whether the company is overspending compared with
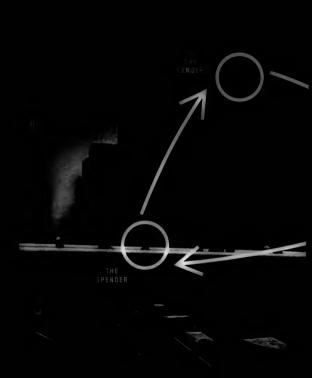
industry peers. Second, the CIO must recognize that even though each IT project may be attractive, the firm's total information overhead may still exceed that of its competitors. If the overhead is out of control, an IT budget that passed the microscope test would be thrown back for resubmission and seen as proof that the CIO doesn't understand the business beyond technology.

The Telescope Test. CEOs recognize that the increasingly volatile competitive arena requires anticipating potential threats to prosperity. External influences such as security risks, technological innovation, value-chain shifts and globalization of competition could lead to mandatory reallocations of IT investments into programs that aren't demonstrably profitable but must nevertheless be adopted as "insurance" to sustain business competitiveness. There are a variety of techniques for dealing with such issues, though I find scenario-driven war games or business simulations exceptionally helpful in reaching consensus on where and how to invest scarce IT funds. If a CIO doesn't address such questions, an IT budget that passed the Microscope and Window tests would be thrown back for re-examination and used as evidence that the CIO should be gracefully moved to a "chief technologist" role.

Implications

A CIO's career can either be advanced or shredded after a budget review. No other engagement is more important. To prepare for that, IT organizations must arm themselves with the means and tools to assure passage of the three survival tests. Such formal methods are the only ways to successfully stand up to such challenges. Whether the initiatives for adoption of such methods originate from the CIO or the CFO doesn't matter. What's important is that they be done before an ax is taken to the budget. ✏

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In the face of flat
budgets and rising
threats, IT security
professionals are
being asked to do
more with less and
to sharpen their
business savvy.

BY DEBORAH RADCLIFF

AFTER BRUCE LOBREE, an information
security engineer and a 20-year IT
veteran, lost his job in October, he
decided to work for contracting firms
such as RHI Consulting in Menlo
Park, Calif., while waiting out the re-
cession. Since then, Lobree has met
client after client who wants a jack-of-all-trades —
someone who can administer any brand and ver-
sion of firewall and intrusion detection, is network-
savvy, can code and is versed in new technologies
like XML, .Net and wireless.

Clients also want someone who can speak in
terms of return on investment to sell projects to
executives and who knows everything about the

Security
UNDER THE

client's business, including its regulatory issues.

"I have peers going back for their MBAs," says Lobew, who has spent six months charting cross-industry regulations and standards affecting security and privacy to meet his clients' needs.

Everyone predicted that IT security jobs would be hot after the Sept. 11 terrorist attacks, but the reality is quite the opposite. Would-be employers say that their security budgets are flat, that risk and threats are rising, and that they're being asked to do more with less because of staffing shortfalls elsewhere within their IT organizations.

For example, in addition to monitoring and intrusion detection, a security analyst might also have the security responsibilities of laid-off Windows NT and Unix administrators, explains David Foote, president and chief research officer at Foote Partners LLC, an IT workforce research firm in New Canaan, Conn.

So rather than focusing on hiring people for their specific security skills, corporate IT managers are looking inside their IT organizations for the right combination of technology and business acumen and then training workers in the ways of computer forensics, intrusion detection and incident response.

"Certifications and technical security expertise aren't my first criteria in placing a security specialist," says Mike Hager, vice president of network security and disaster recovery at OppenheimerFunds Distributor Inc. in New York. "I'm looking for other important factors: Do you understand how the business works? Can you put this in perspective of easier, better, faster and then sell it to the company? Are you a team player? Do you understand the technology basics so I can teach you the rest?"

Monitoring and Response

As at other firms, hiring at OppenheimerFunds is flat overall. But that doesn't stop Hager from dedicating existing resources to new security problems. For example, he has sent two of his team members to the University of Denver to study database security.

Hager has been assigning more training in intrusion detection and incident handling, a move that's consistent with what other firms are doing, says Bill Kaska, division director at RHI Consulting's staffing office in Dallas. Although security jobs are scarce, Kaska says he's seeing more client requests for administrators with knowledge of how to handle cyberattacks, network monitoring and intrusion-detection programs.

"Companies are looking at vulnerabilities across every bit of their organizations, even in their wireless systems," he says. "That takes a basic understanding of network topology in addition to an understanding

of legal and compliance issues, which must trickle all the way down to the security analyst level."

Despite the specialized technical nature of IT security work, employers are more concerned with soft skills. For John Hartmann, vice president of security and corporate services at Cardinal Health Inc. in Dublin, Ohio, key skills include the ability to learn, build relationships and understand business requirements.

Hartmann has provided his staff with training in security policy development and implementation, compliance (particularly with the Health Insurance Portability and Accountability Act) and best practices that are the foundation of the company's vulnerability assessment program. Because he possessed the core skills Hartmann considers prerequisites, Ed Daniels was propelled from telecommunications networking manager to information protection director two years ago at Cardinal, a $49 billion medical supplies and services conglomerate. His networking management work put him in daily contact with other business units, so critical relationships already existed. On top of that, Daniels has a passion for learning, says Hartmann.

Daniels builds his own staff using a similar approach. The company's intrusion-detection analyst, who transferred from Cardinal's pharmaceutical automation group, was picked for his diverse systems and customer service background. The vulnerability assessor came from another Cardinal division, where she provided Unix and database support. She was hired for her writing and relationship-building skills. Even the two analysts hired from outside the firm had little security background.

"All my analysts have diverse backgrounds that would add something to the team," says Daniels.

Cardinal and OppenheimerFunds could shine in their approaches to skills building. Because of layoffs and budget cuts, IT managers are being forced to re-

train existing staff on security issues, says Alan Paller, director of research at the SANS Institute in Bethesda, Md. More than 12,000 students went through the SANS Global Information Assurance Certification program last year, and Paller said he expects that number to be about 16,000 this year.

Meanwhile, the roles of senior-level security managers are also expanding, according to Tracy Lenzner, founder and CEO of security executive search firm Lenzner and Associates in Las Vegas. As is the case with other IT positions, there's very little hiring of security managers going on, she says, and those who still hold security jobs are picking up global responsibilities, particularly where government liaison and international legal issues are concerned. Security professionals with these types of responsibilities are earning salaries of $150,000 to $300,000 per year, says Lenzner, who adds that a handful of executive-level jobs even command seven-figure salaries.

"Security executives must be expert in government regulations, cyberterrorism protection, private-/public-sector partnerships like the critical infrastructure and homeland security, even physical security," she says. "So a lot of these candidates come from government backgrounds."

One such person is Charles Neal, vice president of managed security services for business hosting provider Exodus, a unit of Cable & Wireless PLC. Neal, who was promoted to the position six months ago, having joined Santa Clara, Calif.-based Exodus as director of its cyberattack "tiger team," had been a special agent in the FBI's computer crime squad in Los Angeles.

"There's great expectations within the FBI to work with emissaries around the world, a necessity in the borderless Internet world," says Neal. "There's a lot of carry-over from the FBI to the private sector that people wouldn't expect."

Like his peers at Cardinal and OppenheimerFunds, Neal also looks for business and soft skills from his technical team. When he finds articulate security professionals who are good at relationship-building and have a strong work ethic, he mentors them to take over some of his own workload.
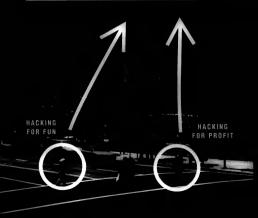
Team-building through mentoring and training are critical first moves in preparing a staff and building loyalty for when Foote predicts will be a "hiring bubble" in the first half of next year. That's when he expects CEOs, under pressure from shareholders, to fund more information security, he says. But with a short supply of IT security professionals who are savvy in both business and technology, IT security leaders should be planning their hiring strategies now, he adds.

Says Foote, "If you're not putting your rebranding plan together in security right now, that small pool of talent of hybrid security workers will be long gone when your CEO is ready to sign that check." ■

HACKING
FOR FAME

BUSINESS

The staff at a Schlumberger-Sema oil-drilling site in Indonesia faced a serious problem. A field engineer had inadvertently programmed the wrong instructions into a computerized drilling tool, and the problem wasn't detected until after drilling had begun. Was there a way to save the situation without the expense and lost time required to stop the drilling and start over?

At 5 p.m. in Indonesia, Schlumberger-Sema engineers placed a call to the company's InTouch system, a program designed to put subject-matter experts in immediate contact with on-site staffers who need answers midproject.

Although it was 4 a.m. in Houston, within 15 minutes the head of the department that oversees the drilling tool had worked out a solution and transmitted it back to Indonesia. An hour later, drilling was back on track.

InTouch is just one example of how companies are starting to use online community tools to value knowledge management beyond its traditional role associated with chat rooms, data repositories and FAQs. Although stored knowledge is still essential, these new tools also allow employees to tap into the most powerful problem-solving resource they have available: one another.

"A big part of knowledge management is knowing which person to tap as a resource rather than looking for information in a book or report," explains Jonathan Spira, chairman and chief analyst at Basex Inc., a New York-based research and consulting firm.

Removing Redundancy

So far, SchlumbergerSema's 18-month program has reduced the time it takes to resolve technical questions by 95% and saved the Paris-based company more than $150 million annually — after factoring in the $50 million per year it costs to operate InTouch, says Reid Smith, vice president of knowledge management.

A similar system also brought big savings to Clarica Life Insurance Co. in Waterloo, Ontario. The insurer uses software from AskMe Corp. in Bellevue, Wash., to identify company experts in various topics and make them available to answer questions from other employees.

Employees can query the system by keyword to find existing answers that might match their questions. If they still aren't satisfied, the system also offers a searchable list of subject-matter experts who can answer questions via e-mail.

"The question might be, 'How do I go about investigating this error that the client reported?' They're usually about a particular part of a process in a specific plan," says Hubert Saint-Onge, Clarica's senior vice president of strategic capabilities.

By querying the system, employees can find out exactly what they need to know from others who are doing the same work.

The system paid off after Clarica acquired Royal Trust Co.'s Canadian group retirement business in January 2001. Suddenly, there were 200 new employees who had to learn to use Clarica's technology and methods while administering corporate pension plans, which tend to be very complex.

"We estimated they would need three months of full-time training," Saint-Onge says. Because of its knowledge management system, however, the company was able to cut its training time by two-thirds.

Results like these are why internal communities like InTouch are the fastest-growing area of online communities, according to John Caldwell, editor of "Online Community Report," an industry electronic newsletter based in Alexandria, Va.

Because of financial constraints, many companies are scaling back their external customer communities, Cashel says. But some of these same companies are investing further in their internal employee communities because the benefits to the bottom line are hard to ignore.

"Internal communities are generally easy to justify financially," Cashel says.

Zetlin is a business technology writer in Woodstock, N.Y.

Pulse of the Organization

Cingular Wireless in Atlanta has grown rapidly through a series of mergers that has brought people from different companies and corporate cultures together. CEO Steven Carter wanted to know how Cingular's employees were handling the adjustment, but he didn't want the information filtered through their managers.

So about a year ago, he issued a directive to find a way for him to have direct contact with employees. This wanted Information to come with them as much as possible, but he does have a brutal travel schedule," says Bonnie Owen, director of employee communications. "He had to find something that would not take a lot of his time."

The solution is a once-a-month live online chat session between Carter and the company's employees. The chats are open to all employees, though a few have been limited to a specific region he wanted to address.

The chats have helped Carter identify small problems before they became big ones. For instance, when the company consolidated payroll software after a recent merger, some employees were confused about how to enter their work hours. That resulted in an incorrect checks, Owen recalls. "Some people in human resources knew about it, but it wasn't widely known," she says.

Because the issue came up repeatedly during a chat, Carter became aware of the problem and "was able to escalate it, give it more visibility and get it resolved faster," Owen says.

— *Minda Zetlin*

Putting Communities To Work

Smart companies like SchlumbergerSema are taking online communities beyond their traditional limits and using them to tap employees' intellectual capital. **By Minda Zetlin**

BUSINESS

The 'Dark Side' Of Leadership

Beware of the forces that will try to neutralize your effectiveness, says Harvard University professor

To lead is to live dangerously, and leaders who ignore the danger can find themselves taken down, write **Ronald A. Heifetz** and *Marty Linsky* in this month's issue of the Harvard Business Review. The authors, who teach leadership at the John F. Kennedy School of Government at Harvard University, adapted the article from their new book, *Leadership on the Line: Staying Alive Through the Dangers of Leading* (Harvard Business School Press, 2002).

This is the latest in a series of monthly discussions with authors of articles in the HARVARD BUSINESS REVIEW on topics of interest to IT managers.

Heifetz talked with Computerworld's *Kathleen Melymuka* about the perils of steering your organization through change.

Q: What's the "dark side" of leadership?

A: It's the danger, and the danger is a product of the real or feared issues that frequently accompany change.

Q: So to the extent that I champion change, I'm in danger?

A: Yes. When you ask people to develop competencies they currently don't have, you're asking them to go through a period of incompetence, and the loss of competence is a terrible thing, especially in IT.

Depending on how proud they are of their competence and how much learning they may need to do to develop new competence, they may fight quite ferociously against the validity of your initiative — and frequently in ways that will endanger your efforts and you personally.

Q: What do you mean endanger me personally?

A: Rarely do I mean physical danger, though on occasions we have seen someone go berserk. In the vast majority of situations, the dangers are to one's reputation, career or institutional credibility.

Q: Where does this danger come from?

A: You can help yourself become "marginalized" — suddenly no longer in the loop, and people are not asking for your opinion. There's our-and-out attack. People can begin to take you on face to face in meetings in a way that reduces your credibility. Or your own people may seduce you by pushing you out on a limb to champion their perspectives without appreciating how much interference you're going to run into.

You find yourself more and more isolated because you're not listening to others in the organization. It's seductive because it makes you feel heroic, and you don't discover till you're on the slippery slope that your credibility is eroded.

Or people will divert you from the tough issues. In IT they may have you focus on the technical dimensions rather than the adaptive dimensions of the change IT is implementing.

Q: What are the adaptive dimensions?

A: That's the degree to which people's ways of working have to change beyond simply implementing the hardware or software system. You can be diverted to be focusing only on the technical aspect so you end up with this wonderful equipment that doesn't get used properly.

Q: One survival tactic you mention is to maintain perspective in the midst of action. But that's easier said than done.

A: It's not easy. You need a set of basic questions to ask in the midst of action: "What are the real stakes? What is this resistance really about? What are the losses involved? What are the adaptive aspects of this challenge, in addition to the technical aspects?" Those will help you reflect. You also need allies and confidants to pull you by the collar and

say, "Let's look at what went wrong and what went right."

Q: Another tactic is to acknowledge their own responsibility for the status quo. Why is that important?

A: First, because you can then begin to correct how you're contributing, and because you will have more credibility in getting people to take losses [and] generate a new competence if you can talk about how you're going to have to generate a new competence too.

One of the big problems of adaptive change is to bring along the uncommitted, and your credibility among the uncommitted will rest on several factors. Key among them is your ability to own up to your piece of the mess and to model the reflection and learning you're asking of them.

Q: I like the idea of "cooking the conflict." Can you talk about how that can help a leader survive?

A: Getting people to tackle tough problems generates conflict, so leadership has a lot to do with cooking the conflict. By that I mean creating a containing vessel — structures and processes, like meetings or a task force — to bring together key parties with different vested interests and orchestrate conflict.

The trick for you is not to be a source of conflict: be the person pointing at it and structuring the process to deal with it. Let a variety of advocates work the issue.

Q: You say it's important to engage others by not trying to solve all the problems yourself. But isn't there a danger of looking weak or indecisive?

A: Yes, there is that problem. To maintain credibility, you also have to display your authoritative expertise in all the situations for which a technical remedy is possible.

But in adaptive challenges, you can't provide an authoritative solution, because the solution lies in changing people's behaviors. If they don't change, there is no solution. [They need to] grapple with the issues and internalize the need for change. ▶

RONALD A. HEIFETZ speaks to beware of finding yourself "marginalized" and out of the loop.

...that you need to know.

❝ Dear Career Adviser:

I have been in the criminal justice profession for 14 years and want to develop a career in computer forensics. I'm computer-proficient and have taken a few computer forensics courses. What specific coursework and experience are required to work in this field, and what are the job opportunities?

— JUST THE FACTS, MA'AM

Dear Facts:

If you're interested in analyzing DNA to solve violent crimes or unraveling Enron Corp.'s financial woes, there are essentially two types of computer-related career tracks, says Susan Narveson, president of the Largo, Fla.-based American Society of Crime Laboratory Directors (ASCLD Inc.) and administrator of the Laboratory Services Bureau for the Phoenix Police Department.

In computer forensics, an individual examines confiscated computers, disks and data. The other option is a career in computer systems management for crime laboratories.

Computer forensics work typically involves tasks such as reconstructing data for investigators who want to use it to link suspects to criminal activity. In this case, you would need an extensive background in all computer operating systems, including models and systems no longer in use, plus training in the methods used by criminals to hide data.

Alternatively, working in crime laboratory systems management might involve working with databases such as the National Integrated Ballistics Information Network and the Integrated Automated Fingerprint Identification System, as well as the Laboratory Information Management System. Both areas require a computer science degree. Laboratory management jobs may also require a degree in a physical science such as chemistry.

Computer forensics jobs are usually in the public sector.

A criminologist with a systems background might start at $36,000 per year, rising to around $80,000 as a manager, notes Narveson.

Pay appears to be rising as this field moves toward formal accreditation. The American Academy of Forensic Sciences in Colorado Springs (www.aafs.org/Education/schoollA.htm) has information about undergraduate, graduate and doctoral criminal justice/forensic science programs.

❝ Dear Career Adviser:

I'm a software engineer who moved into product management in the wireless arena. After two and a half years as a product manager in a shaky situation, I began to look for a new position.

When I received an offer for a new job, I gave two weeks' notice and was told to leave that day.

I would have been able to work for the next two weeks and what my pay plus positive references in the future.

The company's position is that it's an "at will" company and that it owes me nothing.

— BOOTED OUT

Dear Booted:

Your employer may be an at-will company, but more depends on whether it has a two-week resignation notice policy specifically written into its employee handbook, says Tina Ducciai, a human resources consultant in Napa, Calif.

Although some companies might give you two weeks' pay to retain your goodwill without a written policy, she says, they are really under no obligation to do so, and many will walk you out the door when you announce you're leaving. ❞

WORKSTYLES
Unlimited Outlook

Monika Fey, applications manager at Limited Technology Services (LTS), the IT arm of The Limited Inc., talks about the stress and rewards involved in developing systems for the clothing and personal products retailer.

What are the most critical systems supported by your department? "There are three silos within LTS. The area I am within is development, and there's also support and the ITO [enterprise technology operations] group, who are the hardware and software experts. My group supports data warehousing. The data warehouse effort has been going on for five years, and

we're dedicated to one brand at a time. Once we're finished, we transfer the day-to-day support to the LTS umbrella."

How would you describe the pace of the work? "It's very intense. My team has been together for the last two and a half years, and we're looking forward to a nice summer, because there's been quite a bit of overtime and a lot of stress. This summer is the first opportunity in a long time where I can see downtime for the team."

How would you describe the overall culture of IT at your company? "I consider LTS to be energetic, diverse, innovative and smart. My team itself is like a basketball team. They've figured out each other's strengths and weaknesses. Everyone knows who's strong at what."

How much interaction does your IT department have with business areas? "It's constant. In fact, when we work on projects together, we hold daily status meetings, where we get together with key users for half an hour to discuss issues, status and the overall timeline."

What do you like most about how career advancement and paying for training is at your company? "Since I started at The Limited, I have seen

many facets of each of our brands and the technology that supports them. As we go from one data warehouse to another, we also move from apparel to personal products. It's a very different product with different business characteristics."

What aspect of work do you look forward to each day? "I absolutely adore my team. That really motivates me to walk in the door every morning. It's a good environment, even when it's stressful, and we know how to let off steam and have a good time."

What aspect do you dread each day? "The stress. It's the work/life balance that I need to stay on top of. I can get carried away."

— *Mary Brandel*
brandelx@attbi.com

Limited Technology Services

Who they are:	The technology arm of retailer The Limited Inc., whose brands include Express, Victoria's Secret and Bath & Body Works
Main location:	Columbus, Ohio
Number of IT employees:	750
Interviewee:	Monika Fey, applications manager

Couldn't we just keep throwing more
money at the database and hope for the best?

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TECHNOLOGY

THIS WEEK

THE RIGHT PRICE

Revenue optimization technology can help set prices for maximum profitability, but the tools and processes require training and historical transaction data to deliver results. **PAGE 48**

EMERGING TECHNOLOGIES

New disk-based backup systems designed around inexpensive Advanced Technology Attachment drive arrays promise faster backup and recovery times at prices competitive with those for tape. **PAGE 52**

QUICKSTUDY

Replication is the process of making duplicate copies of enterprise data, either at the application or storage level, for content distribution, disaster recovery or other business needs. Learn more in this week's primer. **PAGE 54**

SECURITY JOURNAL

Security manager Vince Tuesday discovers that cutting remote-access costs while maintaining security standards is no easy task, but it's a necessary one in the current business climate. **PAGE 56**

NICHOLAS PETRELEY

Unsung Alternatives

A COUPLE WEEKS AGO, I wrote about Qt, the multiplatform C++ user interface tool kit by Trolltech (www.trolltech.com), as a possible alternative to Java for building platform-independent end-user applications. I would like to recommend a few more unsung alternative technologies this week, with the focus this go-around on Web programming languages.

First up is the tried-and-true Perl. The Web once ran on Perl, so I hesitated at first to include it in a list of unsung alternatives. But Perl deserves mention for two reasons.

First, it's still an outstanding language with a lot of performance-enhancing options available, such as the Perl module for the Apache Web server. Second, the temptation to share my personal view of the language was far too great. Put it this way: If you toss a bunch of monkeys into a roomful of typewriters, the chances of them accidentally producing the complete works of Shakespeare are effectively nil. The chances of them producing a working Perl program, however, are actually good. In short, it may be a great language, but I don't have to like the way the code looks.

PHP (www.php.net), also known as Hypertext Preprocessor (So why isn't it HPP? Go figure.), is the C and C++ of server-side scripting languages. It's a C-like procedural language when you want it to be, and object-oriented when you prefer C++. And it integrates directly into HTML when you want your code to be entirely unreadable.

I've been using and modifying two open-source PHP Web applications for a couple years now with a great deal of success for my nonprofit sites Var-Linux.org and Petreley.org. The first PHP project I used was the weblog software PHP-Nuke Version 4.4.1. This version began as a classic example of sloppy programming, and I confess my additions haven't improved it much. FUD-forum, on the other hand, is a more carefully crafted piece of work from start to finish. If you are in the market for high-quality discussion forum software and will consider deploying it as a PHP program, this is the open-source project to beat.

A list of server-side Web application languages wouldn't be complete without mentioning Python (www.python.org). When it comes to languages, I actually prefer Python to Java or PHP. Its concise use of white space tends to freak out some

programmers, however. The only way to write a proper Python program is to indent the code properly with the tab key or space bar.

Don't even think about experimenting with Python for Web applications until you've visited the Webware for Python site (http://webware.sourceforge.net). Unless there's some other Python project out there I've missed, this is the definitive means of combining Python with the Web.

The only problem with Webware for Python is that it isn't terribly well documented, so you may find it a bit difficult to get running at first. But if you're a Python fan, you'll find it well worth the effort. The sample programs, while primitive, provide good examples of how to use Python objects to use partitioning to separate the look and feel of your Web application from the business logic and data.

I should also mention another object-oriented language, called Ruby (www.ruby-lang.org). I know next to nothing about this language, but it's worth listing here just to avoid the dozens of e-mails I'd get from Ruby fans who feel obliged to let me know I neglected to mention it. It must have a bit of a following, because there is a module available for running Ruby programs directly from the Apache Web server. Then again, there seems to be an Apache module for just about every language, including Tcl and LISP. Well, it's not entirely bad. I'm not aware of any Apache modules that support Fortran, Cobol or GW-Basic, but no doubt someone will send me a Web address to prove one exists.

If you truly believe in using the right tool for the job, it pays to explore options other than Active Server Pages, Java Server Pages, Perl and J2EE. I hope these suggestions will get you started. ▶

Setting the PRICE RIGHT

Revenue optimization tools can give profitability a boost, but success depends on training and data integration.

L OOKING TO NAVIGATE its way to maximum profitability, Continental Airlines Inc.'s cargo division has turned to software automation to hold the line on profit and get the most cash possible from its aircraft freight compartments.

The group uses a customized software package from Rockville, Md.-based Manugistics Inc. to ensure that it sells all available freight space at the most profitable price. During the past two years, the application, which the airline has dubbed CargoProf, has saved the company roughly $9 million by making freight bookings more efficient, says Ed O'Meara, director of car-

go revenue management at the Houston-based airline.

"It forecasts cargo capacity, and it then nightly sets an optimal value on what we need," he says. "It creates the threshold of value we need when taking bookings, vs. available capacity."

Continental is just one of many companies that have begun applying analytic software to systematically arrive at the right price for the right customer. The factors the software takes into account vary by industry.

The new system at Continental lets booking agents forward freight order requests for reservations on a given flight, says O'Meara. The legacy reservation system captures order data such

as a shipment's weight, dimensions and contract price and forwards the data to CargoProf. The software checks available capacity in the airplane's bays, taking into account both the weight and size of the cargo, and compares it against a preset pricing model. It then adds several other variables, such as expected passenger baggage and even extra fuel requirements based on seasonal factors, before crunching the numbers. CargoProf then either accepts the reservation at the customer's contract price or rejects it if taking on the shipment isn't cost-efficient.

If it rejects the order for one flight, CargoProf can also check to see whether

an upcoming flight could profitably carry the cargo. In addition, CargoProf can handle incremental price changes for rush shipments.

O'Meara says the installation was a bit of a challenge but adds, "We didn't have as much trouble with the application as the process changes we had to undergo to use the system effectively."

Training users on navigating and using the complex system was also a big undertaking. For example, Continental's capacity management team had to learn how to override the capacity forecast on a certain flight due to unexpected head winds, which would require greater fuel load, says O'Meara.

He cites other examples of the teaching challenge. For instance, Continental had to train cargo reservations agents to get enough information when taking orders. Training won't help unless the users understand the underlying business processes, and that often requires specialists.

A Tool Box Approach

These revenue optimization techniques are less a set of products than an approach that uses analytical tools in order to get as much of the price of a product or service into a company's pocket as possible, says Kevin O'Marah, an analyst at Boston-based AMR Research Inc. The approach requires special training and integration work, but after this is done, say users, companies are able to respond to changes in the marketplace with greater agility.

There are different ways to deploy revenue optimization tools, O'Marah says. For instance, they may help in determining the right selling price for an item, in figuring out how to offer discounts or in deciding what to charge a given customer for an airline seat. The market is based on what O'Marah calls "pricing along the demand curve,"

Setting the
PRICE
RIGHT

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Human Factors in Global Contingency Planning
A User/Management Perspective

WHEN YOU'RE DOWN,
YOU'RE OUT.

Human Factors in Global Contingency Planning
A User/Management Perspective

In disaster recovery, it is commonplace for dedicated people to perform heroic acts that save their enterprises. The collective knowledge, skill, ingenuity and intuition of its disaster recovery team is often what enables an enterprise to recover from a disaster.

But people are more effective with resources:

◆ Planning and testing give recovery teams more options, enhancing their chances of success.

◆ Adequate resources ensure that plans can be properly executed and also help teams respond quickly to events that are unexpected.

◆ Support allows recovery teams to concentrate on the tasks at hand

This paper discusses the formation, preparation, and support of recovery teams from the standpoint of the people who comprise them.

The Right People

Disaster recovery teams are the organized groups of people that actually fix problems caused by disasters. Recovery team members are the people who actually have the wrenches in their hands and the keyboards at their fingertips. They are the individuals who must perform under intense pressure during a stressful recovery. Naturally, the success of a recovery team is directly related to the quality of the members. Too often, however, recovery teams are populated by junior staff members or by unmotivated staff members. The effects of such short-sightedness are often discovered during a disaster, as minutes fly by and management calculates the cost

of downtime.

The best candidates for disaster recovery teams might be characterized as thought leaders in the ranks—

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The best candidates for disaster recovery teams might be character ized as thought leaders in the ranks —

people that everyone goes to with day to day problems. These people typically understand the enterprise's systems, and can usually fix small problems quickly and with an eye toward the ramifications of their actions.

Not only are these thought leaders the enterprise's most knowledgeable and capable members, they also tend to be trusted, confident, able to correct their own mistakes and dedicated to the success of the enterprise. Table I lists additional characteristics of ideal disaster recovery team members, as well as some characteristics that should be avoided during team selection.

Practice Makes Perfect

Enterprise resiliency is expensive, both financially and in human terms. In order for an enterprise to be resilient, its executive management team must invest the time and energy of some of the most valuable staff members in preparedness. Not only must these valued employees be trained in recovery techniques, they must also practice disaster recovery regularly.

The objective in testing a disaster recovery plan is to learn what doesn't work. It is better to find problems during a test rather than in a time of disaster. Experienced staff members are most appropriate for conducting tests because they are the best able to recognize flaws in the plan

Supporting the Recovery Team

The work of recovery teams is an enterprise's critical path to disaster

Table 1: Disaster Recovery Team Member Characteristics

Ideal Recovery Team Member Characteristics	Characteristics to Avoid
◆ Considered expert by peers	◆ Hands-off manager who doesn't actually work on systems
◆ Considered a go to person for problems and questions	◆ New to the organization or unfamiliar with its systems
◆ Works well under pressure	◆ Narrow focus (lack of concern for other enterprise functions)
◆ Confident	
◆ Understands how parts of the enterprise interact	◆ Tendency to err under pressure
◆ Committed to the success of the enterprise	◆ Not adaptable
◆ Trusted by managers and peers	◆ Lacking a sense of urgency about disaster recovery
◆ Able to manage and prioritize but also to take direction	◆ Tendency to assess blame rather than working on problem
◆ Willing to fix problems created by others	

recovery. Recovery teams must be able to focus on their work. Providing a single focal point for status reporting helps meet that requirement. Other actions that tend to streamline a recovery team's work should be adopted as well. For example, if desk top computers more powerful than the enterprise norm would speed recovery, an investment in the more powerful PCs would be money well spent. If executive management directives could circumvent departmental bureaucracy, those directives should automatically follow a disaster declaration.

Recovery teams should also be given the best possible operational and logistical support. Prompt, effective fulfillment of simple roles, such as general assistant or note taker, greatly enhances the effectiveness of

skilled recovery team members. Assistants can fill basic needs (there can never be too much food, caffeine, or water at a recovery site), or assist with liaison to other functional teams. Note takers maintain the all important timeline, record requirements and events as they occur, remind team members of upcoming events, and even act as team spokespeople to the enterprise

Complete support teams also help streamline recovery For example, a group of technicians charged with verifying the work of a recovery team not only relieves the team of that task, but also provides independent quality assurance. As another example, the enterprise's network and desktop support teams can relieve recovery teams from having to provide their own technical support. Any support

that enhances a recovery team's ability to focus on its core task enhances recoverability.

Management Structure
The Disaster Recovery Chain of Command

In recent years, disaster recovery professionals have favored a management model called Incident Command System (ICS) developed by the US Forest Service for fighting fires. Multi-day courses that cover the features and benefits of ICS are available. The basic philosophy of ICS is that a single team manages event response and recovery. Each team member has a specific role. The system works well because it provides a rapid structure in the midst of chaos. All team members know what is and is not expected of them. Moreover, an enterprise that uses ICS can quickly and easily coordinate with other enterprises and agencies that use the same model and that are responding to the same event

When invoked following a disaster, the Incident Command System supersedes several aspects of an enterprise's normal management structure. One ICS team is normally sufficient for a minor recovery. Larger, more complex recoveries may require specialist teams for each of several different functions, with a central recovery authority providing direction and a focus for progress reporting. For example, a recovery might include

- ◆ A technical problem solving team
- ◆ A solution implementation team

- ◆ A clean up team
- ◆ An external communications team
- ◆ An internal logistics team

All of these would follow Incident Command System procedures and would report to a central event management team

Each recovery team should include representation from appropriate enterprise organizations, normally at the first line manager or group leader level. Recovery teams are not typically populated by executive staff members

The Executive Role

Disaster recovery usually requires extensive tactical management.
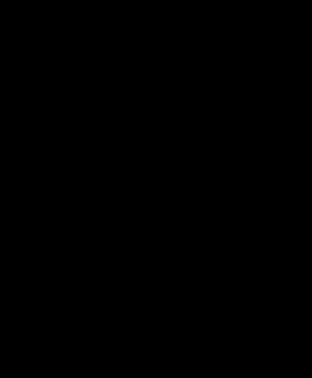
Executives are typically not involved in the tactical workings of an enterprise, and in most cases, they should not be involved in the details of disaster recovery either. Executive presence can also hinder progress because it is naturally intimidating. Executive management should receive regular status reports, and should remain accessible for strategic decisions, such as resource conflict and recovery strategy resolution, or major unplanned expenditure approval. Executives should also appear publicly, encourage and thank recovery teams, speak to outside parties, and in general take all steps necessary to make sure third parties maintain confidence in the enterprise

that each recovery team - distributable to its mission in particular endeavors - reconciliabilities.

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When invoked following a disaster the Incident Command System spreads to several aspects of an enterprise's normal management structure. The ICS team is normally subdivided into a number of recovery teams comprising smaller specialist teams for each of several different functions - with a central recovery authority providing direction and a focus for progress reports. For example, a recovery team might include:

- A technical problem-solving team
- A software implementation team

- A clean-up team
- An internal communications team
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How Disaster Affect People

The input from individuals affects how disasters affect people, both for individuals and for groups. Personal...

Personal and Family Requirements

Psychologist Abraham Maslow identified a hierarchy of needs that people strive to meet. This hierarchy ranges from personal security through shelter and comfort, family and social group attraction, and on to self-actualization...

Whatever the chain of command adopted for disaster recovery, it is important that both the recovery plan and the enterprise's day to day behavior reinforce the principle that once a disaster has been declared, the recovery chain of command is in charge, and significant decisions must be made through it. (This is one reason why it is so important for an organization to have a formal process for declaring a disaster)

If leadership during disaster recovery differs from normal organizational lines, a pro tempore recovery organization chart should be published as part of the recovery plan. It should be clear to the entire organization that the recovery organization will be in effect from the time of a declaration until the event management team stands down.

How Disasters Affect People

The rapid traumatic change that results from disasters affects people both as individuals and as group members in unpredictable ways. Disaster may bring out the best in them, as with soldiers who become heroes in battle, or as with ordinary people who emerge as leaders in a crisis. Disaster may also devastate people and make them unable to function effectively.

Moreover, individuals' reactions to disaster can affect those around them, and can alter the collective reaction of a group dramatically within a short time. A big part of a recovery team's responsibility is to deal with effectively with the issues of being human.

Personal and Family Requirements

Psychologist Abraham Maslow identified a hierarchy of needs that people strive to meet. This hierarchy ranges from personal comfort, family and social group interaction, and on to self actualization (a self-motivational state deriving from satisfaction with one's role in life).

One crucial lesson to be found in Maslow's hierarchy is that until their basic needs are met, people will not attend to enterprise (social group) problems. If, for example, a staff member's family is in jeopardy, the staff member will not be able to focus on recovering enterprise computer systems. Disaster recovery plans must therefore provide for key recovery team members' personal needs (which may be peripheral to the immediate needs of the enterprise), so

that recovery teams and other affected staff members will attend to their recovery, support, and management roles.

Not only must recovery plans provide for key staff members' personal and family needs, people must be made aware that their personal needs will be met during a recovery. Otherwise, they may simply disappear from the picture like the administrator above (see "An Ounce of Prevention"). Recovery team members should be made to feel that the enterprise cares about them and their families.

In cases in which disasters affect large areas, enterprises may have to offer temporary shelter and food to a number of homeless families, either by themselves or in cooperation with recovery authorities. In such cases, human resources professionals

Storage and data networks unite.
Information is shared and managed globally.

should be available to help negotiate access to medical care, housing, food, day care, and other necessities. If recovery team members see that these measures are in place, they are more likely to concentrate on enterprise recovery.

Dealing with Disappearance

Many uncontrollable factors, including death, personal injury, transportation system failure, and personal considerations such those discussed in the preceding section can prevent recovery team members from being available when they are most needed. Even the most complete recovery plan can fail if key recovery team members are not present to execute their parts. If during a disaster, a key team member fails to appear as expected without explanation, two things must be done absolutely as soon as possible

◆ Efforts must be made to locate the missing team member, preferably by non team members. Other team members will naturally be concerned for the missing colleague, and be distracted from the task at hand. Knowing that efforts are being made to locate the missing team member can alleviate that concern.

◆ A substitute for the missing team member must be identified so recovery can proceed on schedule. The best substitutes are obviously individuals within the enterprise with similar skills and knowledge. Basic or generic skills can be obtained through contracts with agencies or individuals. Recovery plans should provide for replacing key individuals.

as well as contain sources for temporary and contract labor to meet unforeseen requirements.

Demotivation

Recovering from a disaster can be overwhelming. The unforeseen events that inevitably complicate any recovery can lead to personal frustration and loss of motivation to see the recovery through to completion. A recovery team can do several things to minimize demotivation, both within the team and across the enterprise:

◆ Frequent testing. People are more comfortable in familiar situa-

tions, particularly during stressful times. If a team has practiced its recovery plan several times before an actual disaster, team members can more easily visualize the recovery goal, and therefore they will not be overwhelmed by intermediate tasks. The confidence that comes from frequent testing can actually result in excitement. Even though no one wishes for a disaster to happen, it can be exciting for a recovery team to see a well-tested plan actually work in a real situation for the benefit of the enterprise.

◆ Effective event management. Following solid event management guidelines can also reduce demotivation. When a recovery appears organized, and each functional team understands its role, individuals and teams are less likely to feel overwhelmed. Such guidelines typically follow two axioms that also help minimize demotivation: (1) focus on advancing the recovery, not on problems encountered, and, (2) focus on minimizing damage through solid team work rather than being concerned

"WE EAT
AND
IN DISASTER
RECOVERY"

storage software company.

VERITAS

about placing blame or attacking the guilty.

If, in spite of everything, teams begin to exhibit signs of demoralization, several things can be done to lift their spirits. Executive visits and messages praising the teams' efforts are immensely rewarding. Broadcasting notice of successes, no matter how small, can also encourage teams that are having difficulty.

Very rarely do recovery teams become demoralized because they have lost sight of the importance of their task. Reminding them how important their task is or explaining the ramifications of failure does not help.

Teams usually become demoralized because they are overwhelmed and continue to face setbacks. In order to re-motivate them, find ways to relieve the feelings of being overwhelmed. Bringing in additional capable resources, setting more achievable or intermediary goals and having some other team solve a difficult problem are all great ways to re-energize a team that's feeling down.

Recovery Team: and Stress

Stress is an integral part of modern life; indeed, moderate stress is healthy and invigorating. But too much stress, as can occur when a recovery team is dealing with a disaster, can become counterproductive and damaging. Close adherence to well documented event management practices can mitigate stress during disaster recovery. Freedom from personal concerns among recovery team members also tends to mitigate stress. The more conclusively an enterprise demonstrates that it values staff members' well being, the more at ease (and therefore focused) recovery team members will be. Caring can be demonstrated in many ways: including keeping recovery teams well supplied with food and drinks, regularly acknowledging team members' contributions, and listening to and acting upon suggestions.

Scheduling teams to work in shifts of no more than 12 hours reduces the potential for overstress from burnout. If people show signs of overstress, one remedy is simply to take a break from the work at hand. Pausing for a snack or meal, or even just taking a walk, can restore perspective and send team members back to work refreshed and better able to deal with the unexpected. If the occasion demands, a bit of fun can relieve stress. Recoveries have been facilitated by ice cream sundaes, massage therapy, toys, video games, and break rooms where movies or music are playing.

Sometimes when team members are idle between recovery tasks, stress can build because there is noth ing to occupy their minds as they wait for the pressure to recommence. Magazines, books, playing cards, and so forth available for use in the recovery facility can distract people momentarily from the pressures of recovery.

More directly related, giving recovery team members the chance to see their work in perspective by sharing information with them can also greatly reduce stress. Team managers should regularly present the status of the overall recovery and discuss how each functional team's work fits into it. If roadblocks turn frustration into stress, management should assist in finding workarounds and additional resources that allow teams to return to recovery tasks relaxed and with renewed encouragement.

Death and Injury

When a staff member is injured or killed in any way related to an enterprise (whether during disaster recov

> Why do disaster recovery teams lose motivation? Frequently it's because they're overwhelmed and continue to face major setbacks. When that happens, they may need fresh resources or more achievable goals.

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ery or not), several situations arise that must be handled delicately. First and foremost, the enterprise should express condolences, and offer the victim's family support and assistance with benefits and other issues. Helping a victim's family is one important way for an enterprise to show that it cares for its own. Being forthcoming with assistance also tends to mitigate negative media coverage resulting from the mishap, but this should clearly be a secondary concern.

Second, the affected staff members or workers should be apprised of the situation. With injuries, regular reports on the injured colleague's condition can help keep the rest of the team's spirits up. The enterprise should establish a means by which co-workers can communicate with the injured party or family. Enterprise gestures such as gifts or flowers should ideally be perceived as coming from co-workers.

In the case of death, qualified crisis counselors should be engaged to help co-workers deal with the trauma. The death should be acknowledged, but should not be exploited by the enterprise in any way.

For example, after the World Trade Center attacks, several enterprises displayed pictures or lists of names in their disaster recovery sites in order to honor co-workers who had been killed or injured in the tragedy. It's important to note that these were not used to encourage people to work harder, or to recover the enterprise for the sake of the fallen employees. Enterprises should honor lost employees, console and assist their families, and attend to the physical and emotional needs of who are those still working.

Getting People Back to Work

Most disasters threaten human safety. Hurricanes, fires, floods, workplace violence, industrial accidents, terrorism, ice storms, and gas leaks are all events that threaten people's physical well being. People are naturally reluctant to put themselves back in harm's way after escaping once, even if they are recovery team members who are accustomed to disaster scenarios. Enterprises must ensure that their recovery teams are safe while they conduct recoveries, and moreover, must make team members feel safe.

Convincing People to Work

Recovery facilities should be and feel safe. One Dallas company has a major facility close to the airport, with a recovery site six miles away. This is acceptable for most disasters, but the site is just a couple of miles from the other end of the same airport runway. If a plane were to crash into the primary facility, most employees would not be eager to report to the recovery site.

Most commercial recovery service providers have solid buildings, fenced

Table 2: Human Resources Best Practices for Disaster Recovery Planning

Populate recovery teams with enterprise thought leaders who understand the systems they may be asked to recover
Allow team members ample opportunity to practice recoveries in order to hone their abilities and develop confidence
Use the Incident Command System or other formal team structure to ensure adequate coordination and reporting
Specify and publicize the organizational structure and chain of command that will take effect if a disaster is declared
Pre-arrange care for team members and their families, and make team members aware of these arrangements
Identify alternates or alternate sources for team members, particularly those with unique skills
Plan for rotating shift coverage to allow team members to rest
Pre-arrange crisis counseling services
Ensure that recovery sites are safe and secure

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properties, locked doors, security personnel at all entrances, well filtered HVAC systems, and sophisticated fire suppression systems, along with direct lines to local fire, police and emergency services. Recovery teams feel safe at these locations because they are safe. Enterprises designing their own recovery facilities should follow these practices as well.

Members of the enterprise security department should be part of the recovery team, to enforce security at the recovery site. Security personnel should be more visible than usual, verifying identification at check points and looking for potential security problems. This kind of activity is often regarded as intrusive in normal times, but can actually make people feel more at ease and secure during disaster recovery.

In some disasters, housing recovery team members in nearby hotels can be important for safety and comfort as well. Recovery team members tend to be more comfortable if housed with their colleagues in a secure hotel a short shuttle ride from the recovery site than they would feel driving home each day. If circumstances permit, team members should have the option of staying in a nearby hotel (with their families) or staying at home and commuting – whichever is more comfortable for them.

People: The Most Important Asset

This paper began by pointing out that all other elements of disaster recovery simply serve to allow people to restore enterprise operations after

a disaster. If the right people have the right tools, practice, support, structure and comfort, even they will be surprised by what they can accomplish in a short time. Table 2 lists human resources best practices that

should be included in recovery plans to help maximize team member productivity throughout the disaster recovery process. Table 3 contains a similar list of best practices for the response and recovery stages.❉

Alleviate recovery team workloads with support personnel and other time saving resources
Organize communications so that team members have only one person to report to
Use multiple teams as necessary to maintain smooth recovery progress
Let people do what they do best. Executives should make strategic decisions, line managers should coordinate resources and make tactical decisions, technicians should fix problems
Ensure that team leaders are sensitive to team members' personal needs and aware of resources that the enterprise has put in place to meet them
Ensure that team members' families are cared for if the disaster affects them
Locate missing team members and apprise other team members of their whereabouts
Follow the established event management process during every event
Develop ways for executive management to reward and encourage recovery teams
Broadcast success-stories no matter how small
Keep teams well stocked with food and drinks
Enforce shift durations of no more than 12 hours
Encourage people to take breaks
Provide distractions or entertainment for people when they are on break
Share the overall status of the recovery with everyone
Provide support services to the families of injured employees
Facilitate communications between working teams and their injured co-workers
Use heightened safety and security procedures during the recovery

Someday your business continuity solution will be called on to save your company.

(But what's it doing this afternoon?)

TECHNOLOGY

Cargo Optimization At Continental Airlines

When a booking agent (1) requests a cargo reservation, the cargo reservation system (2) passes the shipment details and customer contract rate data to CargoProf (3). Meanwhile, the passenger reservation system (4) feeds a passenger forecast to the flight schedule server's cargo capacity forecaster (5), which calculates expected cargo capacity each night for every flight. It passes this capacity data to CargoProf, which calculates for each flight availability and the minimum prices that a booking must meet or exceed in order to be profitable. The cargo reservation system then accepts or rejects the request. Agents with rejected requests can then either try a different day or route or sell the customer into a higher rate class.

where, ideally, the vendor can charge a premium price to one customer while charging a lower fee to another.

"Revenue optimization really isn't a market in and of itself," says Karen Peterson, an analyst at Stamford, Conn.-based Gartner Inc. There isn't any one application or process involved, she says. Rather, it consists of a mix of different industry-specific techniques that help organizations better understand which actions, such as a price reduction, will yield the most profit.

In contrast, traditional, manual pricing optimization techniques including somewhat cumbersome marketing techniques such as discounts, special promotions and free-shipping offers, says O'Marah. They generate no repeatable processes, however.

The advantage of revenue optimization tools offered by vendors such as Manugistics and Dallas-based i2 Technologies Inc. is that they let users systematically set the most profitable prices for their goods and services.

Revenue management and optimization systems won't work unless your operation meets the minimum requirements, says O'Marah. Companies need clean point-of-sale data that can be replenished as needed. Firms requiring daily price updates, for instance, may need real-time feeds.

Pricing by Precedent

Miami-based Royal Caribbean Cruises Ltd. relies heavily on historical data when setting current prices. A group of about 50 professional analysts at the cruise line uses a set of primarily homegrown optimization and revenue management applications to set prices and maximize the profitability of available cabin space. Those systems tap a database containing extensive historical transaction data, says Doug Santoni, vice president of revenue management at Royal Caribbean.

Establishing a price can be extremely complex, because the cruise line has 26 ships, each with 20 or more types of cabins. The booking price is affected by factors such as international currency rates and whether a passenger's reservation includes air travel.

By reviewing the historical data, Royal Caribbean gets a sense of what is most popular with its customers and what is likely to sell. It then creates benchmarks for the system to use, along with demand forecasts and other metrics, and crunches the numbers to set the appropriate mix of prices that will fill the ships' cabins.

But the company doesn't rely on the software alone. Some of its revenue

managers have degrees in statistical modeling and similar disciplines, which help them in determining these benchmarks, says Santoni.

Royal Caribbean's revenue systems have evolved over some 13 years, Santoni says. Prior to the current system implementation, managers had to perform the calculations manually and couldn't drill down into the data with the same granularity and speed that's now possible.

"The real power is not just having the data itself, but being able to work with it and being able to manipulate it," Santoni says. At Royal Caribbean, this helps not only in making successful bookings, but also in determining why a potential passenger may have turned down a ticket.

And having a better understanding of historical customer behavior, users agree, is the starting point for any revenue optimization project. ▶

REVENUE BOOSTERS

TECHNOLOGY

Cargo Optimization At Continental Airlines

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Backing Up Disk to Disk

OUTLOOK: A new generation of fast, low-cost disk-to-disk backup appliances may soon replace tape for some applications. By Robert L. Mitchell

"**M**Y ACCESS FILE is corrupt. Can you restore it for me?" Such common user requests can send administrators on a merry chase that includes digging through an archived tapes, inserting the correct cartridge into the tape loader and then sequentially searching through it to restore the user's data. The process can easily take a half hour or more of an administrator's time.

A new generation of low-cost disk-to-disk backup systems is changing all that, reducing the restoration task to a 30-second point-and-click affair. It's so simple, in fact, that users can do it themselves.

"It's slick," says Bob Kennedy, director of computer resources at construction firm The Newtron Group Inc. in Baton Rouge, La. Newtron is

EMERGING TECHNOLOGIES

an early adopter of the Infini-SAN D2D backup appliance from Los Angeles-based Nexsan Technologies Ltd. The 500GB system, which cost $11,200 installed, has cut the administrative time required for file restores, Kennedy says. "Now you just [click to] restore and it's back," he says.

"The reality of having your backup information on random-access media will change how people interact with their backups," says Chris Bennett, director of platforms and systems at Network Appliance Inc. in Sunnyvale, Calif. "We're on the very front end of what is going to be a revolution in the way people deal with backup issues."

These disk-based backup systems use the Advanced Technology Attachment (ATA) interface internally but present a SCSI, Fibre Channel or

ATA Disk-Based Backup Systems

[sidebar text partially illegible]

Gigabit Ethernet face to the outside world. Devices may support data transfers in block or file format.

Cost is the driving factor behind the trend. ATA-based disk drives aren't new and are common on the desktop. Manufacturing economies have driven prices down to $15 to $20 per gigabyte, making them competitive with high-end tape subsystems. And while the

functionality of ATA drives can't compare to SCSI's reliability and performance as a primary storage medium, they're well suited to streaming and large block transfers.

"Once you get the head in the right place, you can move [the data]," says Bennett.

The systems can also help solve the problem of shrinking backup windows by acting as an inexpensive intermediate cache between the target storage and the tape subsystem. And since software tools like Network Appliance's Snap-Vault can update the backup indefinitely without re-creating the primary backup image, the appliances can back up storage in remote offices over a wide-area network. This lets archival tape copies be created and managed centrally.

Newtron's backup appliance backs up PeopleSoft and SQL Server data residing in its main office across an interleaving fiber link. "If our [main] office burned, everything would be our there on the Nexsan," Kennedy says.

Vendors are also promoting the devices as a general-purpose repository for "nearline," or secondary, storage. For example, third-party software allows Exchange e-mail documents to be migrated to a NearStore device from Network Appliance as they age, without changing their appearance to the end user.

"We're already seeing a change in the way backup technology works," says Nancy Marrone, an analyst at The Enterprise Storage Group Inc. in Milford, Mass. In the future, she says, backup software will include more hierarchical storage management capabilities and the intelligence to "determine what data needs to be backed up to disk vs. tape — and when." ◗

■ TECH CHECK
The Disk-to-Disk Dance

When inserted between a tape subsystem and target storage, disk-to-disk subsystems can support rapid disaster recovery from disk while allowing archival tape backups to occur off-line. By taking advantage of incremental backup mechanisms, administrators can centralize management of remote office backups over WAN links.

- Direct-attached
- Fibre Channel-attached
- Network-attached

TARGET STORAGE

Remote office

DISK-TO-DISK BACKUP SYSTEM

Tape library

YAHOO GOES NEAR-LINE

Yahoo's director of operations explains how his company is implementing the NearStore backup appliance.

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Replication

BY JAIKUMAR VIJAYAN

W

[**Replication** is the process of making duplicate copies of enterprise data for content distribution, disaster recovery or other business needs.]

QUICK STUDY

Synchronous vs. Asynchronous

Hard or Soft?

Corporate Replication

More than just backup, replication lets a far-flung organization gain efficient, quick access to data.

Plant

Branch

Corporate Headquarters

Remote Site

International Office

Replication

BY JAIKUMAR VIJAYAN

W**HEN** companies may duplicate copies of enterprise data for backup, disaster recovery or other business purposes, they are said to be replicating data.

Such duplicate copies of data can reside locally on the same system or network segment, or they can be placed in remote locations.

Replication can take place at the application level or the storage level. Application replication takes place at the transaction level: Each transaction is captured and duplicated on multiple systems. Storage replication involves copying the data that sits under the application.

Organizations replicate and mirror data for a variety of reasons. Since Sept. 11, a major driver for data replication has been disaster recovery and business continuity planning. Companies are hoping to bolster their capabilities in these areas by maintaining copies of data and applications at one or more off-site locations.

Corporations also replicate data to enable wider and quicker access to information across the enterprise. It's quicker to access copies of data stored on local servers than it is to access data stored on a remote server.

Similarly, data is sometimes copied and stored at multiple locations to let multiple business units access it for their individual needs, such as data mining. Development and testing work is also less risky and disruptive when done on a copy rather than on a live production data.

"There are a myriad uses for data," says John Young, an analyst at D.H. Brown Associates Inc. in Port Chester, N.Y. "There are more people [than

> ### DEFINITION
>
> **Replication** is the process of making duplicate copies of enterprise data for content distribution, disaster recovery or other business needs.

QUICK STUDY

ever before] wanting access to and using data within a business. When you combine that with the standard requirement to back up and store data, it's easy to see what's driving data replication."

There are a variety of methods with which to replicate data from a primary source to secondary sites. The choice depends on the level of protection a company's applications require or the business needs driving the replication effort, says Duane McAdam, an analyst at Illuminata Inc. in Nashua, N.H.

A financial services company, for instance, is far more likely to need real-time replication than a manufacturing operation, she says. Factors such as cost, complexity and performance impact also affect the choice of replication method, McAdam says.

Synchronous vs. Asynchronous

Companies that require very short recovery times tend to use an approach called synchronous replication. In this method, data is duplicated in a real-time fashion on a primary system and on secondary systems. All systems are copied simultaneously.

Synchronous replication involves a process called a two-phase commit, whereby data that's being updated on the primary server has to be duplicated on and acknowledged by the secondary sites before the next transaction proceeds. This ensures that data is identical on all copies at all times.

The goals of synchronous replication are near-zero loss of data and very quick recovery times from failures that occur at primary sites. But the two-phase commit process results in performance degradation when the distance between the primary site and secondary site is great.

Synchronous replication can also be costly because it requires high-bandwidth network connectivity.

"To be really bulletproof, you need to do synchronous replication, but most can't afford it," McAdam says.

Another option that's becoming increasingly popular

is asynchronous replication. Related technologies capture a copy of each completed transaction on the primary server, which is then duplicated on the secondary systems. This duplication can happen automatically whenever an update takes place, or it can be programmed to take place at predefined intervals. Replication products can also queue data and send batches of changes when network use is low.

Asynchronous replication doesn't require as much bandwidth as the synchronous approach and can be applied over greater distances with little performance degradation.

It's also cheaper, but it doesn't offer the same real-time recovery capabilities.

Companies may want to use a combination of both approaches to overcome technical issues, Young says. For instance, a company may decide to stick a replication technology midway between two endpoints. Synchronous replication is then performed in hops — first between the original and the midpoint, then from the midpoint to the endpoint.

Hard or Soft?

Vendors today offer both hardware- and software-based replication. Companies such as EMC Corp. in Hopkinton, Mass.; Hitachi Data Systems Corp. in Santa Clara, Calif.; and IBM offer hardware technologies, while others such as Veritas Software and Sun Microsystems Inc. enable software replication.

With hardware replication, all the duplication tasks are carried out by specialized controllers, leaving the server free for other tasks. But controllers from one vendor generally don't work well with controllers from other vendors, so hardware replication tends to tie users to a single vendor.

There are no such limitations with software-based replication, but since server cycles are used to handle the duplication tasks, it can affect performance.

Ultimately, analysts say, the way to go depends on the user's specific business and technology needs.

"More companies are taking replication seriously these days. ... Sept. 11 was a wake-up call," Young says.

Corporate Replication
More than just backup, replication lets a far-flung organization gain efficient, quick access to data.

Cost-Effective Remote Access Proves Elusive

*It's not easy to offer employees remote access
that's both easy and secure — at a reasonable cost*

SECURITY MANAGER'S JOURNAL

BY VINCE TUESDAY

EVERYONE SAYS they want security. They don't. Deep down, end users don't care. They want MP3 downloads, and damn the viruses. They want a blank password, and if forced to have one, they want Windows to remember it for them.

This leaves me with a problem. If these carefree people design and implement insecure systems or use them in an insecure way, I may get fired. If they stumble across systems that are very secure (hopefully because I nudged them in the right direction), I'm seen as unnecessary and may get fired.

So I've decided that I want to worry only about security but instead must include cost savings. If my team keeps cutting costs, then whether or not we have incidents, we'll be invited to stay.

I've spent the past few days debating how we can save costs in our remote-access systems while maintaining adequate security. We have a high-cost/high-security approach at the moment. Finance wants a low-cost system. It would be easy to offer a low-cost/low-security answer, but the tricky bit is to discover a low-cost/high-security fix.

Remote Controls

We spend a great deal of money on remote access. We use Integrated Services Digital Network (ISDN) and analog dial-in for remote access and support. Not only do we have many staffers who globe-trot, phoning in from astoundingly expensive hotel phones, but we also place equipment permanently in the homes of IT support staffers so they can provide shift cover.

Some of our high-speed ISDN end users claim to use the system all the time, but our bills show that some use it for only five minutes per quarter. If we could get them off of dedicated lines while still providing the same service, we could save big on fine rentals.

Other people configure their home systems to check for e-mail every five minutes. This automatically brings up the long-distance connections to the office, and the costs add up. To add insult to injury, many of these users have high-speed cable or Digital Subscriber Line Internet connections. These always-on, fixed-price services are much cheaper than the ISDN service we offer.

The IT support users aren't thrilled about the systems we want them to cart home. Some support technicians are annoyed at having to step away from their hot-rod UFO-style game machines with huge flat panels and use the steam-powered 17-in. CRT computers we give them. We could let them use their high-powered machines and their always-on connection to access their work data over the Internet, but the lack of security in doing that is just that I can't accept it.

The industry-standard solution is to slap on a virtual private network (VPN), but this solves the wrong problem. VPNs do well at using cryptography to stop snooping or attempts to modify data in transit. However, such attacks aren't common. After all, why should hackers bother lifting credit card numbers from live connections when they can steal the entire database? The problems we have are with spoofed authentication and hijacked sessions.

Attackers will go to extreme lengths to steal or guess authentication credentials — and our users pick bad ones, so using passwords is out. Many companies build public-key infrastructure architectures to get around this. But the private key ends up on a password-protected file on the local machine. Steal this and the user's password, and you can connect as that person.

We use SecurID tokens for authentication on our remote-access system. We could reuse SecurID not only at no extra cost for a VPN approach, as we already have the servers and tokens, but it would also stop hackers from stealing, spoofing or using brute-force methods to authenticate credentials. The passcodes it creates can only be used once, and the correct answer changes every minute.

Even if I know with absolute certainty that a valid user started a connection, I don't know what else might travel over that link. If attackers have broken into the user's home machine, they can piggyback on the connection right into the heart of our company.

To make this risk acceptable, we could protect each machine to the same standard as our Internet-facing systems. That would include patching, antivirus scans with regular updates, and intrusion detection with round-the-clock monitoring and expert trained response.

But we can barely manage this on the handful of Internet servers we have, never mind doing that for thousands of users' home machines, each with a different build and under their physical and systems administration control.

So we could give them machines locked down with our standard build and make them use those. But users will connect using their own insecure machines because they want it easy.

Perhaps I should make their machines full clients on our network. If I use Microsoft Terminal Services, then I can get away with a very limited network connection from them to internal terminal servers. I can use a firewall to protect this approach properly.

But even here, we face risks. Remote-control hacker facilities, such as Back Orifice, would still be able to get in. Can I trust that even my users would report rumors moving and files being opened as if by ghosts?

Setting Limits

My favorite alternative is to convince most users that they don't need remote access to all of our applications. Access to e-mail on our Microsoft Exchange server is the killer application for them, so we could set up an Outlook Web Access (OWA) server with a SecurID wrapper. OWA requires only a Web browser client, so it will work from a Web café or hotel business suite.

In that configuration, the worst a hacker could do is read and fake e-mail from our employees. It's cheap because staffers can use their own machines and network connections while keeping our systems safe. But will end users accept it?

I'm still looking for answers. If I find a truly secure, low-cost alternative for remote access, I'll either launch a start-up to sell it to others — or tell you about it in a future column. ▶

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NEWS

Online Trading

Con Edison has already built comprehensive tracking functions into its trading systems. But the systems will likely require significant revisions to satisfy federal authorities, Menella said.

"We designed it for our own purposes, just so we'd have a detailed record of what we've done, not to report it to the outside," Menella said. "That's a different type of system." For example, he said, the systems weren't built to identify wash trades or potentially questionable trades.

Early last month, Toronto-based Ontario Power Generation Inc. went live with new systems that support the province's deregulated electricity marketplace.

CIO Dietmar Reiner said he now wants to give customers better access to data and to reduce paperwork cycles for en-

ergy traders. But such projects could be moved back if Ontario Power has to make significant systems changes so that it can continue to process trades with U.S.-based energy companies, Reiner added.

Robert McCullough, an energy industry analyst in Portland, Ore., questioned whether anyone can design systems

that can properly oversee the kind of light-speed transactions in online energy trading.

"What we're discovering is the centralized computer modeling may have been a weakness," McCullough said.

In order to prevent such abuses from taking place, better analytics and improved integration among systems —

both within a company and between business partners — will be needed, said James Walker, an analyst at Forrester Research Inc. in Cambridge, Mass. "I think the demand on IT increases," he said.

Most energy trading operations now process trades in overnight batch feeds. Walker said. Mirroring a financial services industry initiative, they would need to link their trading systems with back-end credit and accounting applications to create straight-through processing that provides real-time visibility.

Reiner said the information needed to prevent wash trading exists but is often divided among generation, wholesale and distribution companies.

"We don't have the visibility right now, but we could get a good sense of what's available in transmission and generation if we needed to find out that information," he said. ▷

Reporter Melissa Solomon contributed to this report.

The Online Disconnect

One of the lessons emerging from the national energy trading scandal is that putting good systems in the hands of unscrupulous managers will lead to bad deals.

James Walker, an analyst at Forrester Research, said some energy traders were able to manipulate systems in ways that state and federal regulators hadn't envisioned, turning simple trades into false-revenue and ill-gotten profits. "We are going to see quite a bit of change in the industry as a result of this," he said.

Government agencies have been trying to discern how these trading systems work once they got off the drawing board and into production, said Patrick Roach, an attorney at the Federal Trade Commission.

But Robert McCullough, an independent analyst in Portland, Ore., warned that better technology only makes it easier to rule brokers to perfect their schemes in some cases.

"We can't catch up to the product — it moves too fast," he said. "How do you propose to stop something you can't catch?"

Energy traders in an unregulated marketplace have been forced to build systems that reuse the data involved in trading with other companies, noted Bob Manalis, a vice president at Con Edison Energy in White Plains, N.Y. But Manalis said traditional mercantile exchanges provide some protection and might become the model for the future.

"More protection of the trades is not necessarily a bad thing, and we might be looking at a model where individual companies have to work through an exchange in order to make sure everything's on the level," he said.

— Michael Meehan and Melissa Solomon

Rogue Threats

nents and systems routinely "sniff" its facilities in an attempt to detect rogue APs.

"We do drive around our buildings and see what we can sniff out," Maiorana said. "If we find one, we shut it down."

That puts Delphi way ahead of many corporations, said Chris Kozup, an analyst at Meta Group Inc. in Stamford, Conn.

Kozup said many companies aren't aware of the security problems inherent in unauthorized wireless devices, which are usually installed without any kind of security. But once alerted to the issue, large enterprises that conduct wireless LAN audits find as "many as 10 to 20 rogue APs connected to a network," he said.

The rogue APs discovered

by Kozup's clients so far have been installed by employees of the companies, but he said IT managers also need to be aware of the threat of "malicious" rogue APs that could be installed by outsiders.
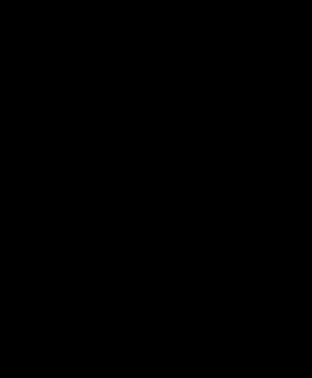
Spotting Rogues

THE PROBLEM
■ Workers install low-cost wireless LAN access points (AP) an enterprise networks without informing IT departments.

THE SOLUTION
■ Ironclad policies that forbid installing APs without IT approval.
■ Physical inspection of LANs to locate unauthorized APs.
■ SNMP tools that can detect unauthorized network connections.
■ Wireless LAN security tools that can conduct signature verification and protocol analysis and check for traffic anomalies.

Brian Grimm, a spokesman for the Wireless Ethernet Compatibility Alliance trade group in Mountain View, Calif., estimated that technology vendors ship about 300,000 wireless LAN access points to users each month.

Bob Black, a corporate systems engineer at networking equipment vendor Avaya Inc. in Basking Ridge, N.J., said he thinks that up to 3% of those devices, or 15,000 per month, could end up as rogue APs.

Thor Sigvaldason, director of the advanced technology group at New York-based PricewaterhouseCoopers' PWC Consulting division, said, "Any company with 50 or more employees has a pretty good chance" of having undetected rogue APs on its internal networks.

Sigvaldason said the proliferation of rogue APs has been spawned by the low cost of the devices — $200 — along with

> **The problem is going to get worse before it gets better. . . . [Rogue APs are] brain-dead easy to install.**
>
> THOR SIGVALDASON,
> PWC CONSULTING

their ease of installation. "The problem is going to get worse before it gets better, as prices come down," he said. "They're brain-dead easy to install."

Both Kozup and Sigvaldason said deterring the installation of rogue APs must start with establishing unambiguous policies against their use, including the threat that employees will be terminated.

They also advised that companies need to continuously monitor for rogue APs as part of their security procedures. ▷

NEWS

Online Trading

Trading Troubles

Problems plaguing the state's 2000-01 power crisis:

MAY 9 The state of California accuses four energy trading companies for profiteering during the state's 2000-01 power crisis.

MAY 13 Reliant Resources Inc. admits publicly that it conducted sham trades to artificially boost revenue.

MAY 15 CMS Energy Corp. admits to making $4.4 billion in sham trades over an 18-month period.

MAY 16 The U.S. Securities and Exchange Commission expands its probe of Enron Corp. to include general sham trading practices.

MAY 21 The U.S. Federal Energy Regulatory Commission (FERC) orders 150 energy firms to reveal whether they ever conducted sham trades.

MAY 29 El Paso Corp. announces plans to cut its energy trading staff in half.

MAY 31 Deadline for the 150 companies to comply with the FERC's order.

The Online Disconnect

Rogue Threats

Spotting Rogues

THE PROBLEM
Workers install low-cost wireless LAN access points (AP) on enterprise networks without informing IT departments.

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Ironclad policies that forbid installing APs without IT approval.

Physical inspection of LANs to locate unauthorized APs.

SNMP tools that can detect unauthorized network connections.

Wireless LAN security tools that can contact signature verification and protocol analysis and check for traffic anomalies.

> **The problem is going to get worse before it gets better.... [Rogue APs are] brain-dead easy to install.**
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> **THOR SIGVALDASON**

Reported by Melissa Solomon contributed to this report.

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FRANK HAYES/FRANKLY SPEAKING

California Steamin'

MEMO TO: California lawmakers, judges, bureaucrats and other state workers. **Re:** That nasty computer break-in incident. You know, the one in which payroll information for all 265,000 full- and part-time state employees was compromised by a hacker. The one IT people didn't spot for more than a month, then kept state employees in the dark for almost three weeks after it was discovered (see story, page 7).

Of course you're steamed at the IT people. Who wouldn't be? IT shops have fumbled security breaches before, but never with a quarter-million victims. And since you powerful politicians are among those whose names, Social Security numbers and payroll info were hacked, you'll hold hearings so you can ask: How did this happen? What went wrong? What should be done? And who ate what beans?

But you don't need hearings to find out those things. The answers you want are uncomfortably easy to find — and unpleasantly simple.

How did this happen? The centralized state data center had security holes. Security procedures weren't being followed. Patches weren't being applied. A hacker — probably a "script kiddie" — discovered the holes as part of an automated scan that also turned up 2,569 other vulnerable systems. (We know the number because the script sent a confirmation to a Lycos e-mail account for each system that was successfully compromised.)

It took more than a month — from April 5 to May 7 — for IT people to discover the hack. When it was discovered, the whole mess was turned over to the Sacramento County sheriff's cybercrime task force, which recommended not informing anyone about the breach because that might hamper a criminal investigation. That's why 265,000 state employees stayed in the dark — and why they're so mad now.

Once the sheriff found and searched that Lycos mailbox, he finally OK'd lifting the lid. Then all 265,000 state employees were given the phone numbers for credit-reporting agencies Equifax, Experian and Trans Union and told that they were on their own when it came to protecting their identities and credit ratings. As a result, the credit agencies' phones were

swamped, aggravating the agencies, their regular customers and California employees who still couldn't get through.

What went wrong? What didn't? Security procedures weren't followed, which is how the hack happened. There was no advance plan for dealing with a security breach, which is how we got the ensuing mess.

No one thought through the implications of simply handing over the entire incident to the sheriff's task force. No one went to the top to get the boss in the loop. (It didn't help that Gov. Gray Davis — the boss in question — had his hands full with another IT-related political debacle involving an Oracle database purchase at the time the breach was discovered.)

And no one stepped up to handle non-law-enforcement issues, like telling the employees, dealing with 265,000 possible cases of identity theft and handling political fallout.

What should be done? Security breaches happen. There's got to be a plan for handling them. Not just a "throw it in the sheriff's lap" plan, but one that spells out things like who's to be kept informed, when employees will be told, what leaders must sign off on any secrecy and which individuals are responsible for making sure it all gets done.

And, oh yeah, the security procedures must be fixed and the holes closed. But that's already been done.

Who can we blame? The state controller screwed up. So did the cybercrime task force. And the data center staff. But rolling heads and slashing budgets won't improve security. Sure, call 'em in on the carpet. Make 'em all sweat. Chew 'em out.

Then, when you're done, put the blame in the one place it'll do some good: on the hacker. After all, he's the only one you really don't want to do a better job next time around. ◗

The 5th Wave

"Awww, cool — a Web Cam! You should point it at something interesting to watch. The fish bowl! The fish bowl!"

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